

108-page Issue • GN 50-foot Boxcar

P. 72



January 2016
\$5.95/47803

RAILROAD MODEL

CRAFTSMAN

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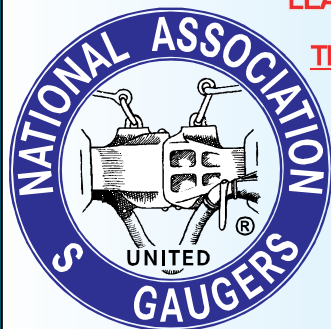
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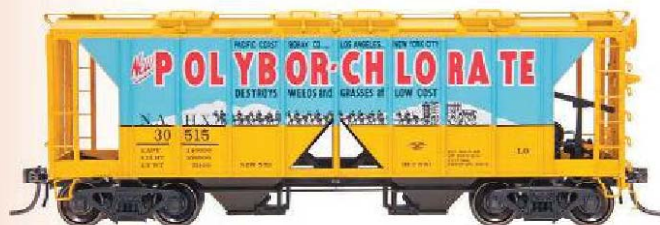


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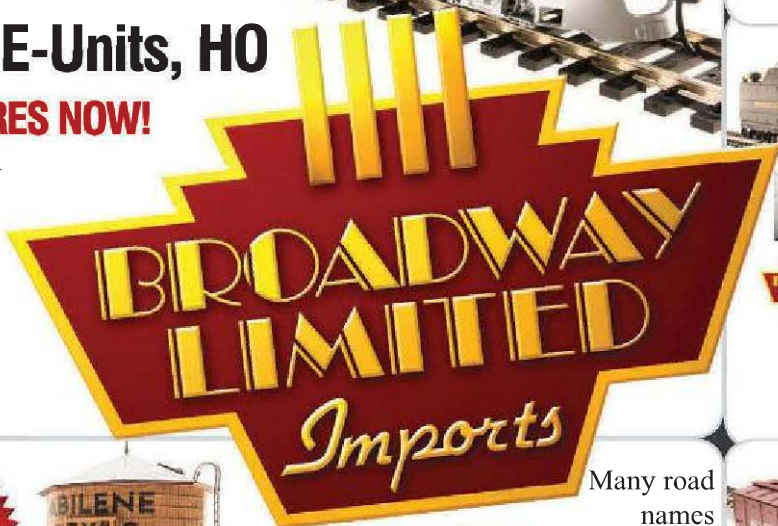
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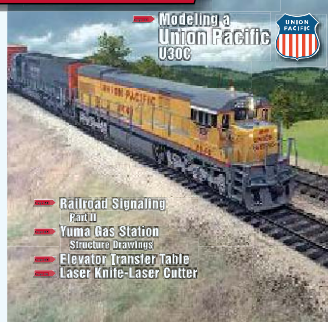
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RAILROAD MODEL CRAFTSMAN

**January 2016
Volume 85, Number 1**



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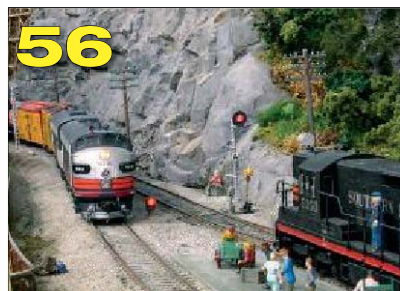
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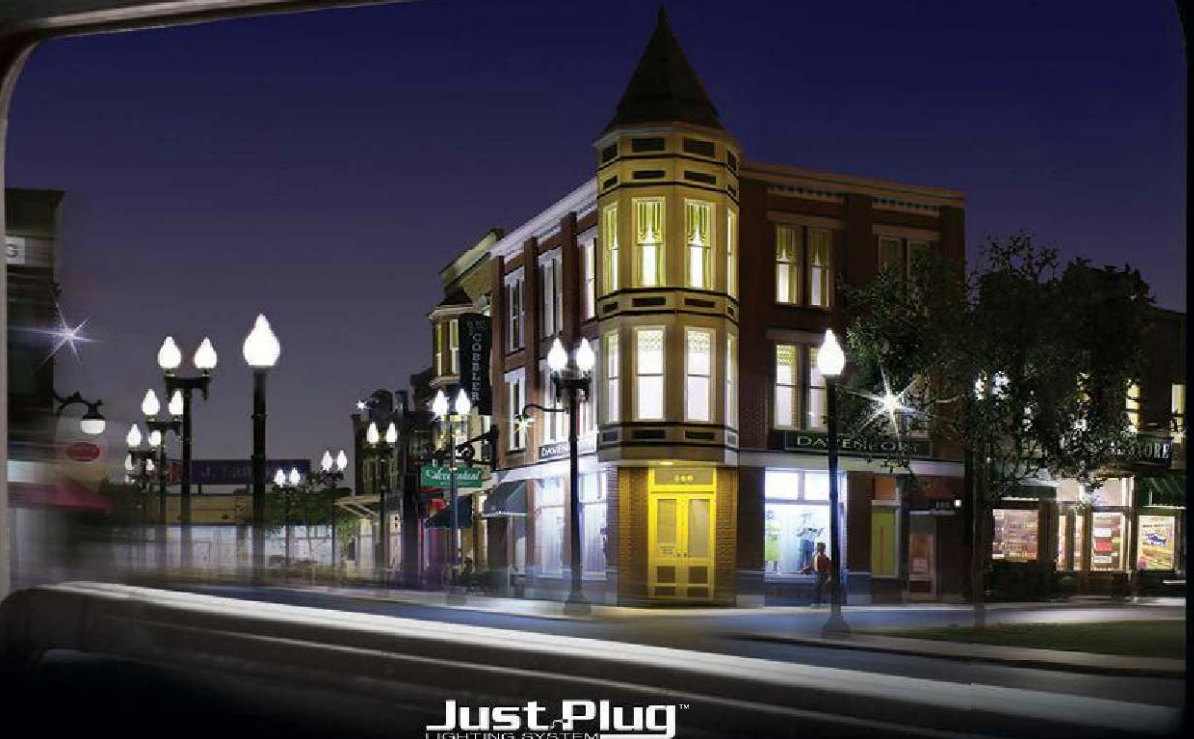
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Railroad Model Craftsman (ISSN 0033-877X) (USPS No. 513-670) is published monthly by White River Productions, Inc., 24632 Anchor Ave., PO Box 48, Bucklin, MO 64631. Periodicals Postage Paid at Bucklin, MO and additional mailing offices. SUBSCRIPTION RATES: U.S.A. and possessions \$37.95 per year, Canada \$50.00 per year, Overseas \$58.00 per year. Single copies are \$5.95 plus shipping. Payment must be in U.S. funds. POSTMASTER: Please send address changes to Railroad Model Craftsman, PO Box 48, Bucklin, MO 64631. Send new subscriptions, renewals, and change of address (please include mailing label if available) to Railroad Model Craftsman, PO Box 48, Bucklin, MO 64631 or email subs@whiteriverproductions.com. Please allow six weeks for change of address.

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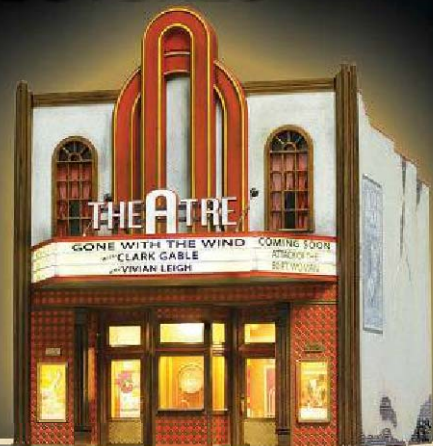
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The **N Scale model** has been designed with assistance from both Amtrak and Siemens in order to accurately replicate this sleek and modern electric locomotive! It will be available in late 2015, bundled with another new passenger car project, the **Amfleet I**.

Kato's Amfleet I cars will join the previously released Amfleet II's and Viewliner cars to further expand the line of available Amtrak single level cars. Representing a higher capacity car than its successor, the Amfleet I is used on Northeast regional trains, with varying consists of anywhere from 7 to 14 cars (during peak hours).



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Editor's Notebook



ScaleTrains.com Debut

Quite some time back, I placed a call to Athearn in hopes of talking with my friend Mike Hopkin. Imagine my horror when I was told that Mike no longer worked there. Myriad thoughts crossed my mind, and I decided to call Mike at home that evening. When I reached him, he reiterated what I had been told, adding that he had not been fired but rather left Athearn to pursue other things. Initially, this saddened me because I knew him to be a driving force in the model railroad community. I had done dozens of design projects under his leadership, but I understood that things must change.

Over the next few months, I came to realize that several other key players at Athearn and Horizon Hobbies had also "retired" at

about the same time as Mike. That got me wondering, what was up?

In this day and age, it is not often that I have been able to witness the birth of a new model company. At the heart of ScaleTrains.com are four of the most talented and experienced modelers and new product developers in the industry. Shane Wilson, who opened his own model railroad-focused hobby store at age 16, heads ScaleTrains.com. Shane was one of the key players that worked on the purchase of Athearn by Horizon Hobbies back in 2004. The other three are all graduates of other model railroad industries such as Micro-Scale and Athearn. Referred to by some as "The Dream Team," Paul Ellis, Joe Olevera, and Mike Hopkin all have invested in the company and are personally dedicated to creating the best models possible.

Paul's strength is his vast knowledge of the prototype and his excellent graphic arts skills. As a railroad prototype modeler with an interest in the Southern Pacific, he regularly gives presentations and clinics featuring his work and methodologies. Paul worked for Micro-Scale as a graphic artist, producing railroad lettering sets before starting a new career at Athearn as a product developer.

Joe is a perfectionist and a skilled graphic artist to boot. Over the last 15 years, Joe has worked for Micro-Scale, Slix Decals, and Athearn as a Graphics Design Manager. During his nine-year tenure at Athearn, Joe developed templates used to standardize the production of artwork. His work is seen on tens of thousands of Athearn models, further laying claim to his excellent graphic skills, research, and proofing abilities. Joe is the Vice President of the Marketing team at ScaleTrains.com.

Mike is a published modeler, having built numerous contest-



level models, as well as a key player in the model railroad industry. He worked for two different hobby retailers for six years and was then picked up by Athearn.

GTEL Turbines

One of the first models out of the factory will be the Union Pacific's Big Blow turbines. To learn more about these stunning models see page 12.





plan in hand, ScaleTrains.com turned its attention to the challenges associated with creating high-quality models at affordable prices. Through all this effort, the team has been on task and has brought several new models to market in less than two years. The team shows no signs of slowing down and is excited about upcoming models. Fueled by their aggressive product development schedule, they have more than 50 different all-

where he worked for 17 years. Initially, Mike worked in quality control, but he quickly rose to manage the entire new product development team. His management skills are second-to-none, and his relationships with Chinese engineering firms are well known. In fact, because of his ties overseas, ScaleTrains.com has hired its own engineering team and opened a new factory using highly qualified workers. This joint effort has made it possible to cut the company's new product development process time in half. At ScaleTrains.com Mike serves as the Vice President of Product Development.

The final addition to the team is Kimberly Alumbaugh, respectfully known as "Kendra." She has worked in the hobby industry for nearly 15 years as an account manager and train specialist. Kendra left Horizon Hobby nearly two years ago after she and her husband Aaron welcomed their newborn son Landon into the world. Kendra feels very fortunate to be coming back into the hobby industry. She considers many of her former co-workers and retailers to be her lifelong friends and cannot wait to reconnect with everyone and establish new partnerships and friendships in the future.

This amalgamation of these three "worker bees" with the mar-

keting force of Shane and Kendra are sure to set the model railroad world on its ear.

ScaleTrains.com is working hard to be unlike any other model railroading company. "When we started seriously discussing ScaleTrains.com, Shane challenged the team to develop methodologies, processes, and models that were new and unique. A lot of soul searching was done, and in the process, we took the time to identify what other companies were doing right and what could be improved. ScaleTrains.com then pulled from their own extensive industry and manufacturing experience to begin the design work for exceptional models and an unparalleled customer experience."

Another area that ScaleTrains.com has intentionally targeted is the broad spectrum of modelers' interest and financial wherewithal. Shane and the team intentionally have designed levels of models that start from very affordable and basic to museum quality models that are a steal for the investment. ScaleTrains.com decided to use an "off-the-shelf" paint produced by Tru-Color for their model finish to make up-grading models easier. This will allow modelers to match perfectly the colors and sheen of the factory paint if needed — a boon to those who superdetail.

With an aggressive business

new model projects "penciled-in" through 2023. Although currently focused on locomotives, freight cars, and vehicles, ScaleTrains.com intends to enter the N-scale market soon and regularly discusses new model venues such as structures, details and more.

Shane assigns a significant part of the company's success thus far to "down-home" values expressed by each of the families involved. The legacy of the Stephens family — founders of Horizon Hobby who strived to create high-quality products while maintaining a customer first approach — serves as an inspiration for this up-and-coming model maker. ScaleTrains.com "is driven to earn the respect of the model railroading community and be considered a top-level manufacturer like many of the companies it looks up to, including Athearn, Atlas, Broadway Limited, Walthers, and Kato.

"The company slogan is 'Innovative ScaleTrains,' and we're continually challenging ourselves to live up to our company promise," said Shane.

Congratulations, my friends. We welcome ScaleTrains.com to the hobby manufacturing family. I personally look forward to seeing the innovations that will come from this new company.

The Team

The ScaleTrains.com team is (left to right): Paul Ellis, Shane Wilson, Kimberly Alumbaugh, Mike Hopkin, and Joe Olevera. They graciously posed for my camera at the company's inaugural celebration held in November 2015 at TrainFest in Milwaukee, Wisconsin.

Receiving Yard *Compiled by Tony Cook*



Product News

HO Scale Product News

ScaleTrains.com debuts with Big Blow Turbine & more

HO — A new hobby company made its public debut at 2015's Trainfest. ScaleTrains.com plans a line of HO- and N-scale model railroading items. Founded by an experienced team of model railroading professionals with a mission of taking the hobby to a new level, ScaleTrains.com will begin delivering its products by the end of 2015.

Among samples present at Trainfest, the new company showed a high-quality HO-scale reproduction of Union Pacific's (UP) 8,500-hp "Big Blow" Gas Turbine-Electric Locomotive (GTEL). This three-unit monster will be ScaleTrains.com's initial locomotive release in HO with pre-order reservations now being accepted on the manufactur-

er's website. ScaleTrains expects to begin shipping its new HO Big Blow GTEs in April.

More than 180 scale feet in length, this never-before-available in fully assembled HO plastic model is offered to modelers in multiple versions. The ultimate Big Blow GTEL will be ScaleTrains.com's Museum Quality release, currently selling for \$724.99. The Museum Quality model includes Digital Command Control (DCC) and ESU LokSound with a variety of unique features. ScaleTrains.com's Museum Quality Big Blow will offer selectable white, red, and green class lights, as well as cab interior lighting, illuminated control panel in cab, and engineer-side ground light. The model has operating cab doors with separate door handles and rubber multiple-unit (MU) and electrical bus connections between A- and B-units. Additionally, the B-unit has sliding engine compartment side doors and a

detailed turbine interior, spinning turbine fan blade, and so much more. Also coming is a Rivet Counter release in two versions: DCC and LokSound (selling for \$574.99) and non-sound (selling for \$424.99).

ScaleTrains.com also displayed a modern Trinity 31,000-gallon crude oil tank car model. This offering will come to modelers in Rivet Counter and Operator versions. Discounts for multiple model purchases are now available at ScaleTrains.com's website. The higher-end Rivet Counter tank car is selling in singles now for \$38.99, while the Operator level release carries a \$22.99 price tag. A January arrival is expected for this new-to-HO tank car model.

Ready to complement Union Pacific excursion steam locomotive runs for the HO hobbyist, ScaleTrains.com will offer a set consisting of UP's "Jim Adams" and "Joe Jordan" six-axle water tender models.

Any company wishing to submit products or press releases for Receiving Yard may do so by providing them to the address below. Submitted materials will not be returned.

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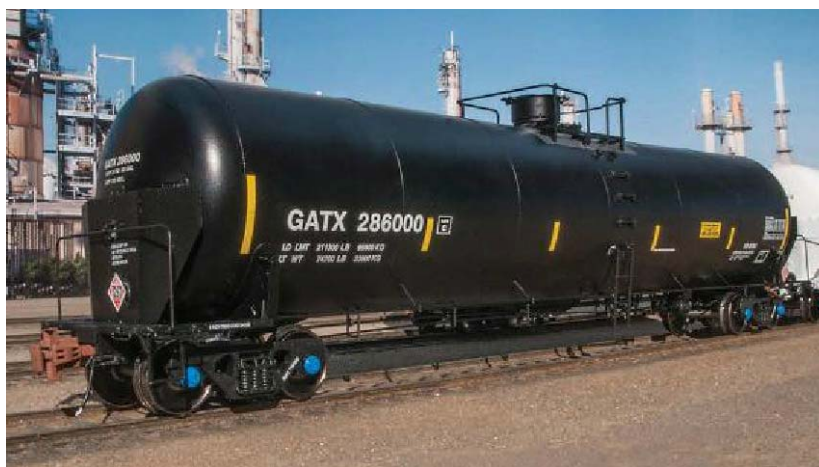
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Detailed and decorated to replicate post-2006 in-service appearance, this pair of highly detailed models will reside in ScaleTrains.com's Rivet Counter series and currently sell for \$119.99 with a February delivery planned.

First up from ScaleTrains.com is its Kit Classics Evans 53-foot double plug door boxcar. Sold in an easy-to-assemble kit form, the first release will be available in December 2015 and includes the following road names: Boston & Maine, Burlington Northern, Chessie System, Conrail, Tropicana, Union Pacific, Vermont, Willamette, and Wisconsin Central. Nothing more than a hobby-size Phillips screwdriver is needed to put this model together to have it operating in minutes. A second release follows in February for this 5,100-cubic-foot Evans prototype with twin eight-foot plug doors. The model is selling for \$13.99 each with discounts for multiple kit purchases.

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Canadian National ABOX cars from ExactRail

HO — ExactRail's HO-scale 5,277-cubic-foot combination-door boxcar model is back with second-owner Canadian National (CN) paint schemes. This prototype, built by FMC, with six-foot plug and 10-foot sliding doors, went into service for Railbox in the late 1970s and originally carried ABOX reporting marks. CN purchased a fleet of approximately 1,000 of these 70-ton "Plate C" cars in the mid-1980s. Some members of CN's roster received full repainting with Tuscan Red body and white lettering, including large CN "wet noodle" herald; other cars simply saw patching to the reporting marks area when en-

tering CN service.

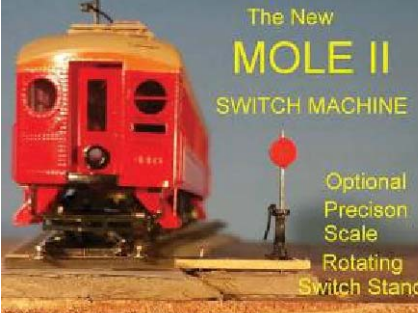
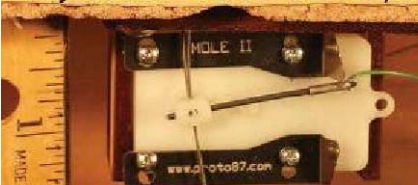
ExactRail offers its nine-panel roof version ABOX combo-door boxcar in both CN versions with multiple car numbers. The as-delivered 12-panel roof Railbox and nine-panel roof Railbox repaint prototypes are also present in this new Evolution Series release. ExactRail sells this and its other HO- and N-scale products direct from the manufacturer's website.

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Trainworx enters HO market with drop-frame trailer

HO — Known for its excellent N-scale model railroad items, Trainworx will present its first HO-scale trailer van by spring. The late-1960s 40-foot trailer van prototype will come to HO scale in two versions: corrugated and smooth side.

Multiple road numbers are coming for all seven road names announced for this initial production run. Corrugated drop-frame trailers will include Great Northern ("Big Sky Blue" scheme with separately applied blue plate), The Milwaukee Road (orange with red lettering),

Santa Fe (four-feather circle-cross herald presented on separately applied plate), and UPZ. Corrugated trailers carry a \$24.95 to \$26.95 suggested retail price. Trainworx's smooth-side drop-frame trailers, carrying a \$24.95 suggested list, will come in three road names: Family Lines, Illinois Central Gulf, and Norfolk & Western.

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All-new 50-foot boxcar from Rivarossi

HO — Hornby America unveiled an all-new tooling 50-foot boxcar model coming for HO modelers. Early pre-production samples shown at 2015's Trainfest illustrated the variations that are to be offered for this new Rivarossi-brand release. The boxcar appears to generally follow American Car & Foundry design and will come in versions presenting sliding or plug door and with or without running boards on the roof.

A colorful collection of 1960s and 1970s era road names are present in the first announcement: Chesapeake & Ohio (Boxcar Red with plug door); Chicago, Burlington & Quincy (Chinese Red with sliding door); Great Northern (Glacier Green with red sliding door); Illinois Central (orange with sliding door); Louisville & Nashville (blue with sliding door); Reading (green with sliding door);

Santa Fe (SFRB reporting marks Indian Red and black with plug door); Soo Line (red, white, and black Colormark with plug door); and Union Pacific (Armour Yellow and silver with plug door). Multiple road numbers will be included for each road name.

Carrying a \$19.99 suggested retail price, Rivarossi's 50-foot boxcar is the first all-new piece of rolling stock to arrive in the company's catalog in many years. The model is expected to be available during the first part of 2016. The fully assembled boxcar features metal wheels, proper weight, interior floor detail, operating sliding door (on select models), and body-mounted knuckle couplers.

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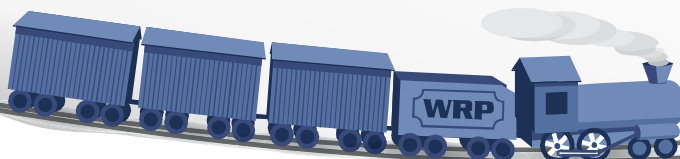
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General American 50-foot Airslide from Tangent

HO — The latest HO-scale replica from Tangent Scale Models is the popular General American Airslide hopper in its 50-foot incarnation. Introduced in 1963, this 4,180-cubic-foot hopper saw production totals top 5,000 cars by 1980. Designed to better serve loading and unloading of bulk commodities, the Airslide hopper is a common sight on North American rails.

Tangent's new 50-foot Airslide hopper model reproduces prototypes built between 1965 and 1980. The first production, which is now available for purchase on the company's website, presents eight road names ranging from 1960s prototypes to current in-service examples. The first collection of Tangent Scale Models' Airslide hoppers includes Baltimore & Ohio (1968 gray with black "capitol dome" herald); BNSF (brown "buffer car" used in crude oil unit trains); Chicago & North

Western (1976 gray with black "employee owned" herald); Clinton Corn Processing (1976 GACX reporting marks); GATX (1993 blue repaint); Gulf, Mobile & Ohio (1966 gray with black lettering); The Milwaukee Road (1965 gray with black billboard lettering); and Industrial Grain Products of Montreal, Canada. Paint scheme and tooling detail variations are present throughout this group of Airslide hopper models.

The fully assembled HO-scale replica carries a \$44.95 list price. Tangent sells its models direct from the company's website and discounts are available for multiple car purchases. An undecorated kit version of the new General American 50-foot Airslide hopper is available.

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New U33B/U36B coming from Atlas

HO — Atlas announced two new General Electric U-Boats for HO at the recent 2015 Trainfest in Milwaukee, Wisconsin. Coming for mid-2016 will be a new Master Series U33B and U36B models. This is the first time Atlas will produce these four-axle U-Boat prototypes in HO. The first U33B release will include Rock Island (maroon and yellow with white speed lettering); Penn Central; and Reading, Blue Mountain & Northern. The first U36B production will include Auto-Train and two Seaboard Coast Line models. All three U36Bs will prototypically feature Blomberg-style truck sideframes. In addition to Seaboard Coast Line's standard black with yellow stripes, Atlas will present the road's trend-setting red, white, and blue Bicentennial U36B.

The Master Silver Series U-Boats will offer 8- and 21-pin sockets for conversion to Digital Command Control (DCC). Gold Series U33B/U36B models will come with factory-installed ESU LokSound systems and DCC control. The model's drive mechanism will include dual flywheels, and lighting will be directional with golden-white LEDs. Atlas



plans early- and late-phase body and sill styles for these models.

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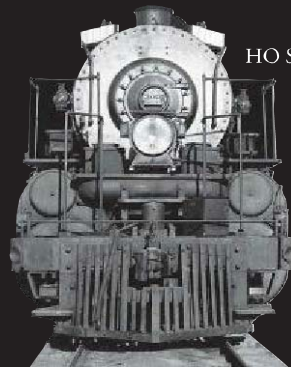
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Athearn announces SD39



HO — Athearn displayed samples of its coming HO-scale SD39 diesel locomotive model at the recent 2015 edition of Trainfest. Athearn will build its new SD39 on the recently introduced Ready To Roll-series SD40 platform and

will share that model's mechanism and Digital Command Control (DCC) and sound offerings. All original owners of Electro-Motive Division's (EMD) SD39 will be represented in the initial production, plus one secondhand operator. The original purchasers for EMD's 2,300-hp, six-axle SD39 included Illinois Terminal; Minneapolis, Northfield & Southern

(MNS); Santa Fe; and Southern Pacific (SP). Athearn's other road name for its debut release will be Norfolk & Western (N&W); the road added SD39s to its roster with its early 1980s acquisition of Illinois Terminal. Athearn plans two lettering size variations for its N&W SD39s.

Road-specific features from SP's signature light package to dual Hancock whistles on MNS models are among the many details going into this new Athearn model. Accurate-size fuel tanks, inclusion of dynamic brakes, and other road-specific features will be seen on this model. DCC-ready SD39 models carry a \$134.98 suggested list, while DCC versions with SoundTraxx's Tsunami sound systems list for \$184.98.

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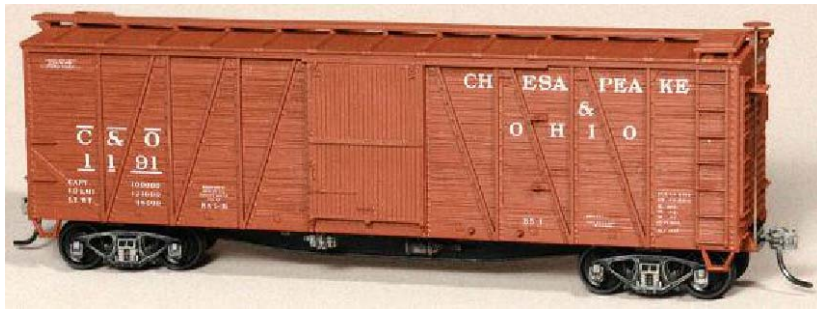


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C&O wood-side boxcar kits from Division 7, MCR, NMRA

HO — Cincinnati's Division 7, Mid-Continent Region (MCR), National Model Railroad Association (NMRA) presents two Chesapeake & Ohio (C&O) boxcar kits for HO modelers. Accurail's 4300-series wood-side boxcar model was selected to represent C&O's collection of 1,000 cars purchased in 1919. Two car numbers (1153 and 1191) in Division 7's release follow the appearance of rebuilt prototypes that came from C&O's Raceland Shops in 1931. The other two offerings (1501 and 1505) present postwar rebuilt cars that came from Raceland Shops in 1948. These 1500-series cars served C&O into the 1960s.

Division 7 states Accurail's model is close to the look of the C&O prototype with the exception of the kit's fish-belly

underframe. The 1100-series kits include Andrews-type trucks, while the 1500-series kits feature Bettendorf trucks.

Interested modelers may purchase these new HO-scale C&O 40-foot single-sheathed wood boxcar kits for \$20 each. All four kits are available for \$76. Shipping via USPS is \$6.50 for one kit or \$9.50 for two to four kits. Ohio residents must add 7% to the total price of the kits and the shipping fee with their payment. You may mail your check or money order to: Division 7, MCR, NMRA; P.O. Box 62501; Cincinnati, OH 45262. Customers outside the U.S. may contact Division 7 for shipping charge information.

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Z Scale Product News



Chicago & North Western E-units from AZL

Z SCALE — American Z Line's (AZL) collection of Electro-Motive Division E-units grows with the addition of yellow-and-green Chicago and North Western (C&NW) models. Two road numbers are available for C&NW E8As (5027A and 5031A). The powered models are a match for AZL's heavyweight C&NW passenger cars released in 2015. Visit American Z Line's website to view the complete collection of road names now avail-

able for these sleek Z-scale E-units.

New Z-scale freight cars include 17,600-gallon corn syrup tank cars decorated for Archer Daniels Midland (ADM) with the company's "molecule" logo. These tank cars are sold in singles and multi-car packs. Union Pacific BethGon Coalporters are available in four multi-hopper sets. The cars are aluminum color with yellow ends and include coal load. Also new are 89-foot Trailer Train flatcars with a pair of Z-Panzer's M548 tracked cargo carriers. The flatcar is yellow, and the carriers are presented in a sand hue.

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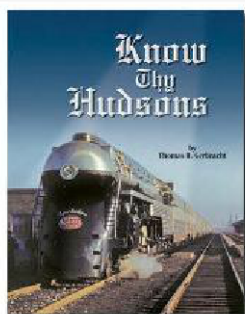
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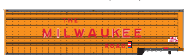
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O Scale Product News



New looks for Atlas O Trinity covered hopper

O SCALE — Atlas O's modern 5,161-cubic-foot Trinity covered hopper reproduces one of the most popular contemporary prototypes on the rails today. A fall 2016 delivery will bring three new paint schemes for this O-scale model: CSX, Iowa Interstate,

and Rio Grande. A new road number is coming for Atlas O's early lettering version BNSF hopper. The manufacturer is promoting its Action Orange Rio Grande example as an "alternative history" release, depicting what this hopper would look like if the road had remained out of mergers with Southern

Pacific and Rio Grande. The hopper is available in 2-rail (MSRP: \$114.95) and 3-rail (MSRP: \$109.95) versions.

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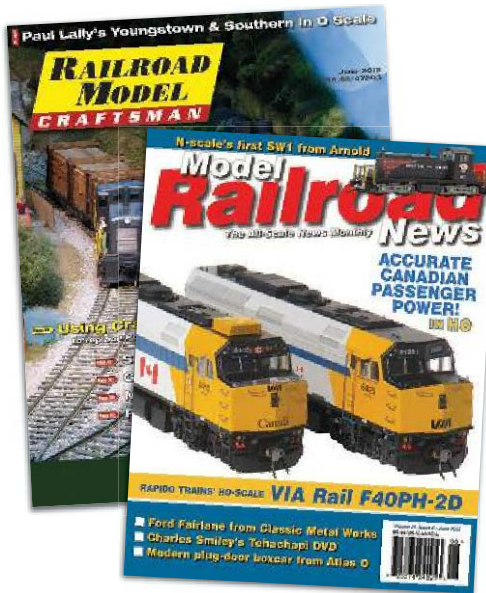


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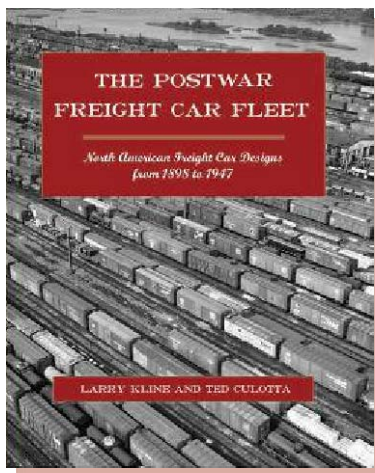
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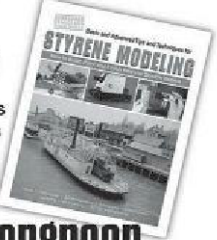
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N Scale Product News

Spring delivery for Kato SDP40F

N SCALE — The first locomotive built for Amtrak was Electro-Motive Division's (EMD) six-axle SDP40F. The initial SDP40F models arrived in 1973 and came numbered in the 500-series, wearing Amtrak's red-nose Phase I paint scheme. Kato will present the early production SDP40F, spotted most notably by its pointed nose, as an all-new N-scale diesel locomotive model for April/May delivery.

The \$125 release will come in four road numbers and two Amtrak paint schemes. In addition to Phase I paint (504 and 505), Kato will produce Phase II paint scheme models (529 and 535).

Amtrak's Phase II scheme presented equal-width red and blue bands running around the mid-section of the diesel. Kato's N-scale SD40-2 drive will serve as the basis for this new model's mechanism; the drive is easily converted to Digital Command Control with the installation of a separately sold decoder. Matching hi-level Amtrak "El Capitan" passenger cars in Phase I paint (10-car set; MSRP: \$285) are available for this new SDP40F offering.

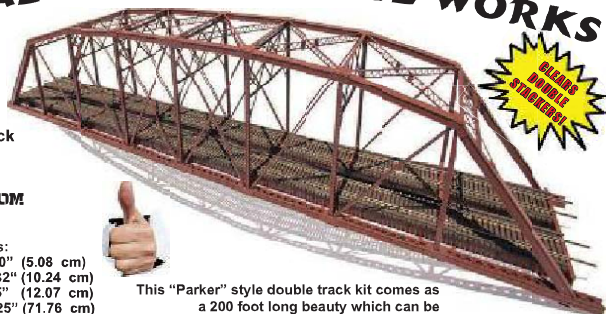
This release will mark the first time for N-scale modelers to be able to purchase a ready-to-run plastic model of this interesting prototype.

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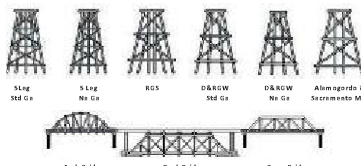


In May 1973 the Chicago & North Western received 500 4750 cuft Pullman Standard covered hoppers that had been built at their Butler, Pennsylvania facility (lot number 9663). These 173000-173499 series cars were delivered in the then-standard green paint with a minimalistic yellow cootie stencil "Employee Owned" herald applied directly to the car side without the black background and ball. These Accurail three-bay covered hoppers, custom decorated for the society by Accurail, include Accurate trucks and couplers, and are available in kit form only in three numbers (173050, 173493, 173447).

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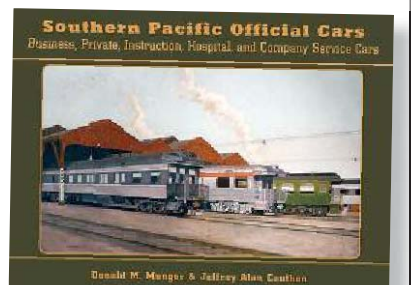
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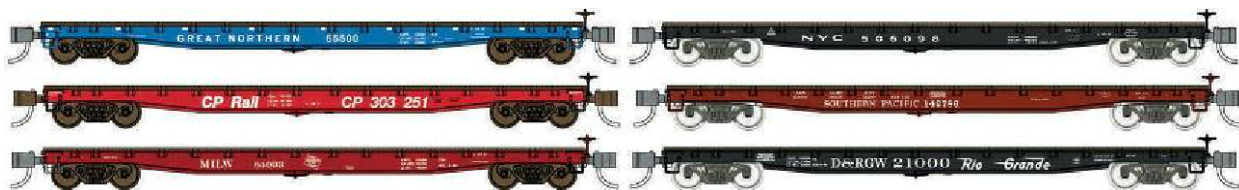
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New fish-belly flatcar from Wheels of Time

N SCALE — An all-new N-scale flatcar is coming from Wheels of Time that will present a 53-foot, 6-inch general service welded fish-belly prototype. The first production, due to arrive by spring, will include CP Rail, Great Northern, The Milwaukee Road, New York Central, Rio Grande, and Southern Pacific. Prototypes came from car builders such as Bethlehem Steel, Pacific Car & Foundry, Marine Industries, Pullman-Standard, and railroad-owned shops.

Wheels of Time's coming N-scale

flatcar model will be properly weighted for smooth performance and derail-free running, ride at proper height over the rails, and will include body-mounted knuckle couplers. The fully assembled model carries a \$22.95

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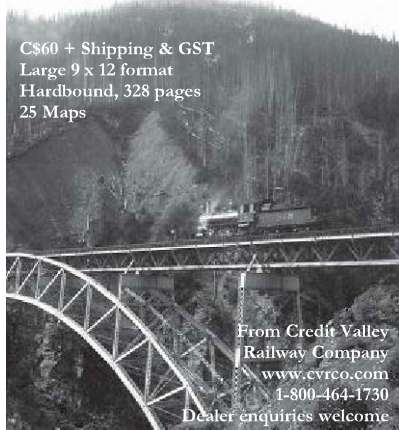
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Multi-Scale Product News



Light Genie from Model Rectifier

MULTI-SCALE — Model Rectifier Corporation (MRC) is introducing a new wireless radio-controlled operating system ready to provide modelers with handheld access to a variety of layout lighting and animation systems. MRC's Light Genie works for any scale model railroad and controls LEDs or incandescent bulbs in any lighted accessory on your layout. The system can control three-light traffic signals, automatic crossing signals, and provides more than 15 unique

lighting effects. The handheld remote possesses a range of more than 50 feet, and you can power MRC's Light Genie from your existing model railroad power system (AC, DC, or DCC) or install an optional power supply to run the system independently. Visit MRC's website for pricing and additional information.

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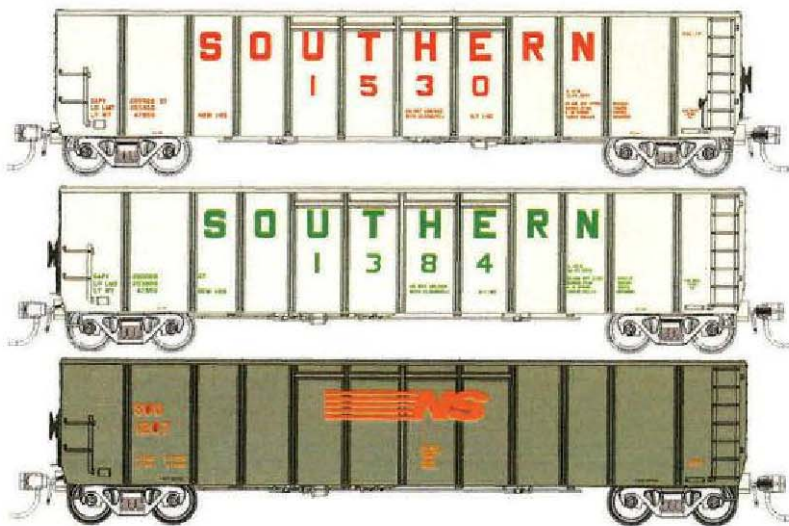
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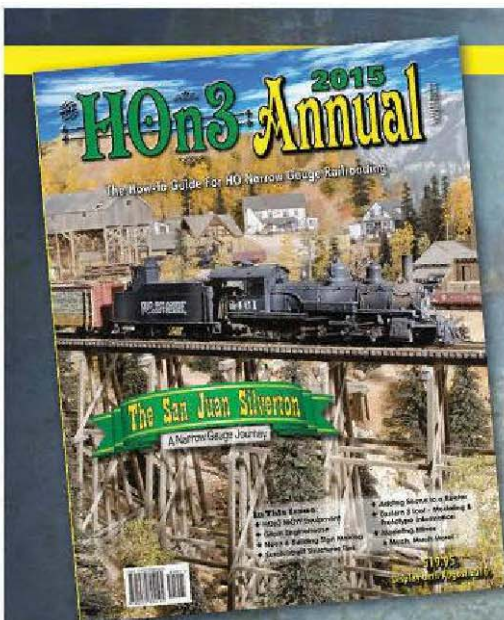


New run for HO & N Silverside gondolas from Fox Valley

MULTI-SCALE — Fox Valley Models plans three paint schemes for a new production of its Silverside coal gondola for HO- and N-scale modelers. Two Southern Railway versions are coming: green lettering and red lettering with CNO&TP reporting marks. A Norfolk Southern example with SOU reporting markings is also in the works. The single HO Sil-

verside carries a \$27.95 suggested retail price. Fox Valley's N-scale version retails for \$22.95. Multiple car numbers are coming for each paint scheme, and 6-pack sets will also be available.

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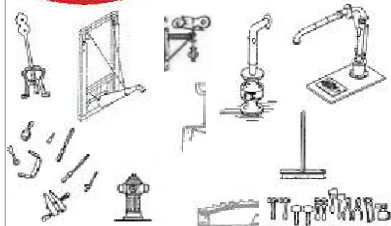
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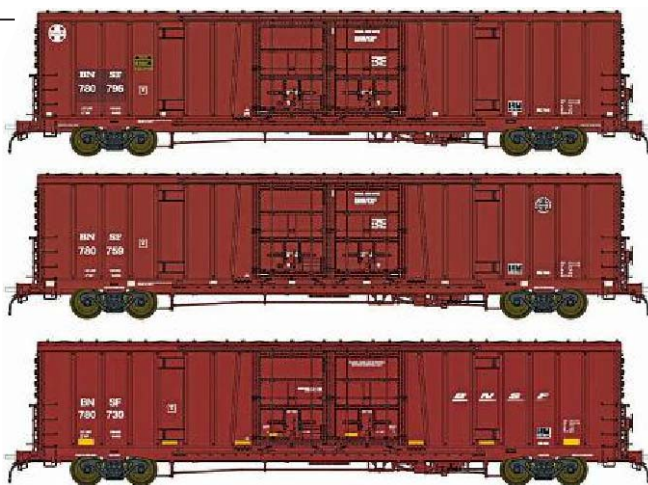
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BLMA Bx-166 boxcar returns with BNSF cars

MULTI-SCALE —

BLMA Models' HO- and N-scale Bx-166 double-door 60-foot boxcar returns this fall with new BNSF offerings. Past production provided modelers with Santa Fe examples; now BLMA adds 1996 and newer prototypes.

Three BNSF versions are coming, which will include Santa Fe-patched example with re-stenciled reporting marks, repaint with original round BNSF herald, and repaint with current BNSF Powerbar herald. Powerbar models are accurate for operation beginning in 2005, while the other two offerings match prototypes in service from 1996 to the present.



BLMA's Bx-166 model will include prototype ride height, body-mounted knuckle couplers, and 36-inch metal wheels. The HO-scale Bx-166 boxcars carry a \$42.95 suggested retail price, while the N-scale examples sell for \$28.95.

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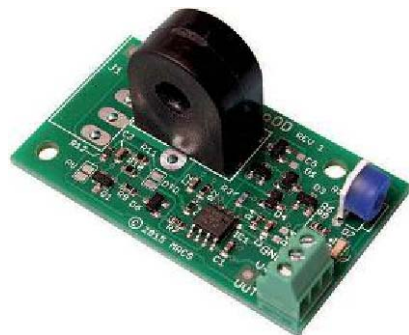
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compatible with Chubb (JLC) ODMB and MRCS ODX4 motherboards, and draws 5mA and 5-volts. Visit MRCS on-line for additional information.

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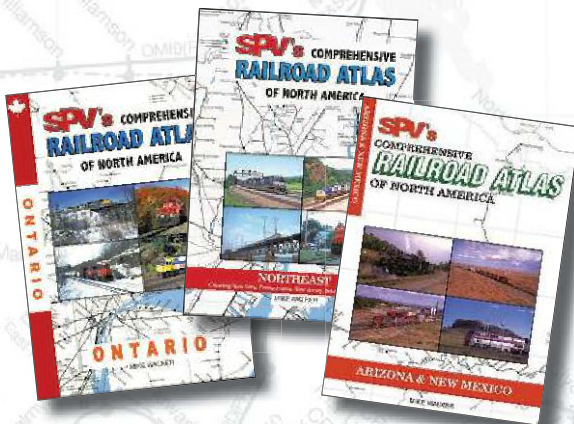
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Rail Books

Publications
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SERVICE WITH COURTESY: The Story of the Durham & Southern Railway



DR. CARY FRANKLIN POOLE

Durham & Southern history from Tarheel Press

Dr. Cary Poole presents the history of North Carolina's Durham & Southern. Tarheel Press' new softbound book includes 126 pages in landscape 11 by 8½-inch format. The road's corporate history is documented, with source material obtained directly from company records, from its 1891 formation to merger into Seaboard Coast Line in 1976. *Service With Courtesy: The Story of the Durham & Southern Railway* includes 150 illustrations (photos and maps), plus detailed equipment roster with notes. This new title is available for \$25 from the publisher and booksellers.

The Tarheel Press
P.O. Box 1205
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www.tarheelpress.com

Chicago Streetcar Pictorial

The first history of Chicago's streetcars to come from Central Electric Railfans' Association is now available. *Chicago Streetcar Pictorial: the PCC Era, 1936-1958* presents 448 pages with more than 600 color illustrations. The title, retailing for \$70, covers the complete history of PCC cars that operated in the Chicago area. A bonus DVD is included with each book presenting the full-length program, *Chicago Streetcar Memories*.

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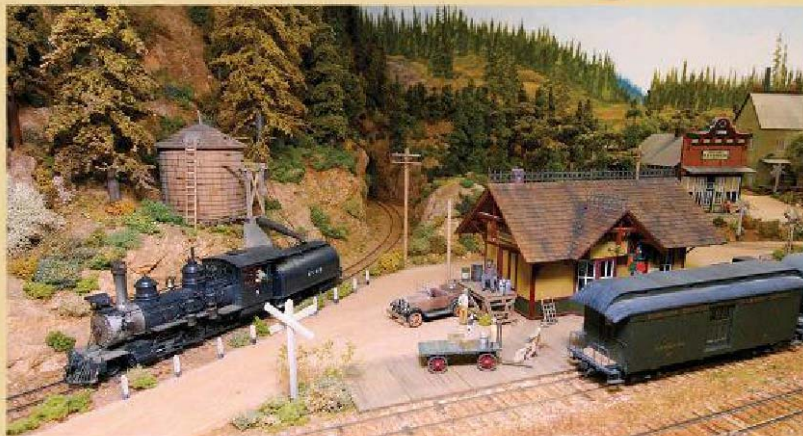


Jeffrey Wien
David Sadowski
Bradley Criss, Photo Editor

Bulletin 146 of the Central Electric Railfans' Association

Includes Bonus DVD: Chicago Streetcar Memories

Dave Clune's On3 Cascade County Narrow Gauge



This magnificent model railroad captures the essence of classic steam-era narrow-gauge railroading with an artistic presentation, superb modeling and smooth, precision equipment operation

Video By Jeff Johnston

Dave Clune's Cascade County Narrow Gauge on DVD

A new video presentation available on DVD presents a journey over Dave Clune's excellent On3-scale layout. Featuring a variety of scratchbuilt structures, as well as rolling stock, the program tours Clune's empire during an operating session. An interview with

Dave Clune is included in this 85-minute program.

Jeff Johnston Pictures & Words Publications
3405 Videra Drive
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541-914-1152
www.trainvideosandparts.com

Shortlines of the Desert Southwest from Four Ways

Rail photographer Jim Shaw provides an in-depth look at the many shortlines in America's desert southwest. From the early 1960s to the present, this new Four Ways West publication details and illustrates these railroads in Arizona, Nevada, New Mexico, and Utah. This geographical area is home to approximately 30 roads that author

Jim Shaw presents with a brief history, plus color and black-and-white images. This new hardcover title retails for \$59.95.

Four Ways West Publications
14618 Valley View Avenue
La Mirada, CA 90638-4351
714-521-4259
www.fourwayswest.com

Norfolk Southern Locomotive Directory 2014-2015

The latest edition of Withers Publishing's comprehensive directory of Norfolk Southern's locomotive fleet is now available. A unit-by-unit listing of the road's roster of nearly 4,000 locomotives is presented in 208 pages. The softcover, 6x9-inch format title features all-color images and lists for \$34.95.

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Rail Books Review

Southern Pacific's Eastern Lines 1946-1996

by David M. Bernstein

published by the North Texas
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www.ntxnrhs.org

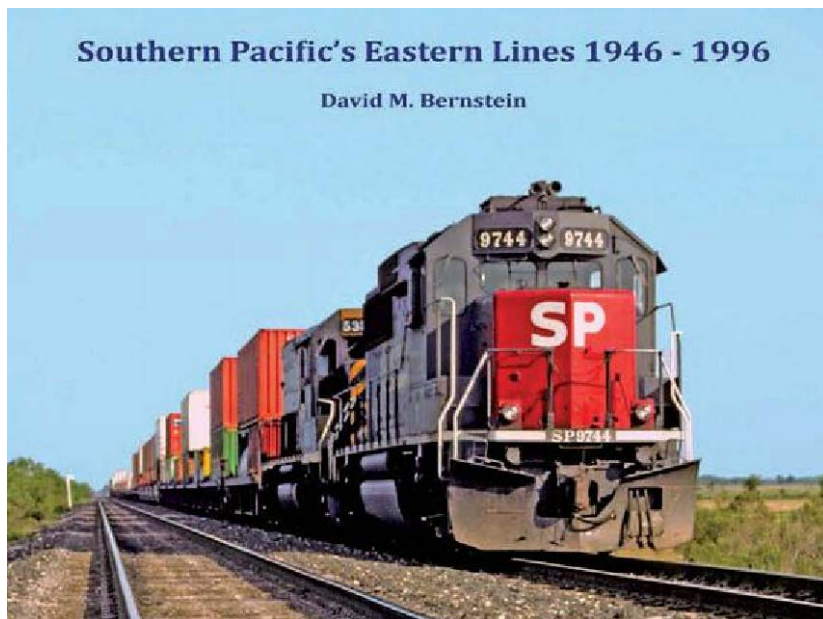
Though it's really not as flat as legend would have you believe, Texas is an ideal choice for the model railroader to consider as a location to reproduce in miniature. The recent release by the North Texas Chapter of the National Railway Historical Society documenting Southern Pacific's (SP) lines in Texas and into Louisiana serves as a great resource for the hobbyist. The book's author, David M. Bernstein, knows this territory well. He is not only a noted Texas railroad historian, but also worked for the SP as a dispatcher.

The book presents a mix of nearly a thousand color and black-and-white images across its 412 hardcover pages. Reviewing this title with the eyes of a model railroader, I find a wealth of inspiration on what a railroad traversing this part of the country looked like during the second half of the 20th Century. The survey period of the book is all Southern Pacific and covers right after the conclusion of World War II (1946) up through the merger into Union Pacific (1996). Essentially, diesels are what you'll find powering trains in the book; however, some steam is also present. Excellent maps enhance the depiction of Southern Pacific's network of lines that went from New Orleans

on Louisiana's eastern edge out across the lower-center section of Texas to El Paso. The book divides the region into sections and informative captions and the mentioned maps leave no question as to where the reader is as they travel through this 11x9-inch landscape-format presentation. Though the subject is Southern Pacific, you'll find some neighboring railroads and foreign visitors pop up throughout the book, including Santa Fe; Seaboard Coast Line; Texas-Mexican; and even the Gulf, Mobile & Ohio. The conclusion of the book presents SP's divisions, subdivisions, branches, and stations with mileage and speed limit (freight and passenger) information.

For the model railroader seeking a

visual journey across the SP, the aerial views of yards and the many trackside shots will provide you with a plan for recreating this exciting road in your basement. The images show the condition of SP's right of way and its facilities in excellent detail, which is very important in appreciating a prototype area and knowing what is required to duplicate it accurately in model form. The road's motive power is also represented with images that highlight *Daylight*-scheme Alco PAs in passenger service from the 1940s to 1960s to SP's final diesel purchases of the 1980s and early 1990s. A great prototype railroad book should leave the hobbyist eager to create...this new book does just that and very well! — **TONY COOK**



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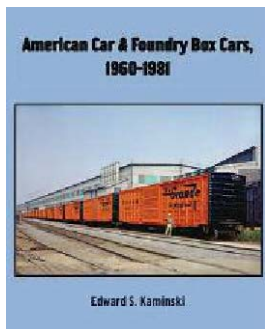
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American Car & Foundry Box Cars, 1960-1981, Edward S. Kaminski

The last period of AC&F building of box cars was during 1960-1981, and this book provides both the history and extensive color photography, along with details of car design and construction in this period. Many colorful paint schemes were in use by railroads and lessors, large and small, and they are shown here, including many Incentive Per Diem schemes. A complete roster of the box cars built is also provided. Coverage includes 40-foot as well as 50-foot inside-post cars, 50-foot outside-post cars, and 60-foot inside- and outside-post cars.

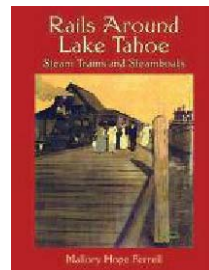
Author Kaminski is an acknowledged authority on freight car history and has extensively researched AC&F records to write this account. Modelers of the 1960s or later, or freight car fan, will want this book. 256 pages, 466 photos, 41 drawings and graphics, roster, index. **Price: \$75**

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Rails Around Lake Tahoe, Mallory Hope Ferrell

Lake Tahoe lies along the California-Nevada border. Its first railroads were logging roads, delivering mine timbers and cordwood from mills at lakeside to the Comstock mines. Steamboats plied the waters to move people and log booms. As logging declined, tourists flocked in. A narrow-gauge railroad was built, to bring tourists from the Southern Pacific to the lakeshore, and new steamboats carried travelers around the lake. The story is a vivid part of Lake Tahoe's history.

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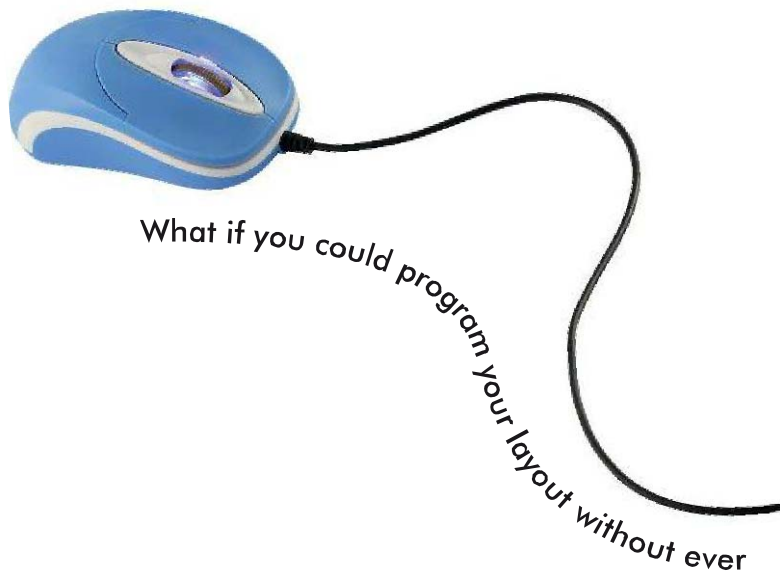
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Please submit your events online at:
www.rmodelcraftsman.com/timetable.

SPECIAL EVENTS

WEST SPRINGFIELD, MASSACHUSETTS, January 30-31, 2016. Amherst Railway Society Railroad Hobby Show at Eastern States Exposition Fairgrounds, 1305 Memorial Avenue. This is a 2-day railroad hobby show with more than 475 exhibitors, 50+ operating layouts, historical societies, museums, manufacturers, photographers, artists, travel agents and so much more. All in four huge buildings totaling over 8 acres of space. Visit web site for details. Admission: 14.00



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NMRA EVENTS

SANDY SPRINGS, GEORGIA, January 12, 2016. Piedmont Division Monthly Meeting at Holy Innocents Episcopal Church, 805 Mt Vernon Highway. The Piedmont Division of the NMRA will hold their monthly meeting. There will be brief announcements, theme of the month and a clinic. Join us for an evening of model railroading fun and fellowship. Admission: FREE. Contact Gary Jarabek at (770) 509-6941 or visit <http://piedmont-div.org>

PROSPECT HTS., ILLINOIS, February 21, 2016. Fox Valley Division Membership Meet at Gary Morava Recreation Center, 110 W. Camp McDonald Road. Clinic presentation: "Keeping the Line Open: Manufactured and Homebuilt Plows and Flangers" by John Drozdak follows our regular business meeting. Contest: Lighted railroad signal, signal bridge, or Grade Crossing, etc. Enjoy contest awards and refreshments. Admission: Free. First time guests are welcome to attend and learn more about the NMRA. Contact Jeffery Jarr, at (847) 286-8755 or visit <http://www.foxvalleydivision.org/>

NOBLESVILLE, INDIANA, January 31, 2016. Central Indiana Division Model Train Show & Swap Meet at Hamilton County 4-H Fairgrounds Exhibition Hall, 2003 Pleasant Street. Clinics on how to improve your model railroad skills. NMRA model judging. Dealers selling new and used trains and railroadiana. Operating model layouts from G to Z scales. Refreshments available. Free parking. Wheelchair accessible. Sponsored by Central Indiana Division NMRA. Admission: \$3.00 per person, \$5.00 for families. Contact Tom Cain at (317) 696-2818 or visit <http://cid.raifan.net>

MADISON, WISCONSIN, February 1, 2016. South Central Wisconsin Division, NMRA Meet at Zor Shrine Center, 575 Zor Shrine Place. Enjoy clinics, model and photo contests, door prizes, and home layout viewing. Admission: Free. Contact Paul Mangan at (608) 835-9577 or visit <http://www.nmra-scwd.org>

PARIS, ONTARIO, CANADA, January 17, 2016. 2016 Paris Junction Model Train Show at Paris Fairgrounds, 139 Silver Street. Enjoy multiple operating layouts, dealers, NMRA craftsmen corner, and more. Admission: Regular \$4.00, NMRA Member \$3.00, Children under 12 Free. Contact Edward Howes at (519) 442-7193.

CLUB OPEN HOUSE

LOMBARD, ILLINOIS, January 23, 2016. Winter Open House at Prairie Scale Model Railroaders, 3 East Ash St. Enjoy our HO scale proto-freelanced model railroad. New members welcome. Admission: Free,

donations welcome. Contact George Podas at (630) 915-1271

NORTH HALEDON, NEW JERSEY, January 2-3, 2016. 58th Annual Model Railroad Show at Garden State Model Railway Club, 575 High Mountain Road. Garden State Model Railway Club has been in operation since 1953. Enjoy our 40x40 HO scale model railroad featuring scenes from New Jersey and eastern Pennsylvania. Admission: Adults \$6.00, Children under 12 FREE with adult. Contact Bob Savino at (201) 387-8716 or visit <http://www.gsmrrclub.org>

BETHPAGE, NEW YORK, January 16, 2016. Bethpage Operating Model Railroad Show at Bethpage High School, 10 Cherry Avenue. Model railroad show featuring operating layouts in Z, N, HO, S, O Trolley, Lionel, G, circus modelers, MTA/LIRR TRACKS Program, and more. Two large rooms. Refreshments available. Admission: \$5.00 Adults, \$1.00 Youth. Contact Steve Smith at (516) 346-9071.

SYRACUSE, NEW YORK, February 28, 2016. Syracuse Model Railroad Club Train Show and Open House at Eastwood American Legion, Post 1276, Nichols Avenue and James Street. Enjoy two HO layouts, a LEGO layout, dealers selling model trains and railroadiana, and more. Admission: \$4.00 Adult, \$2.00 12 and under, \$12.00 Family Maximum. Contact David Babson at (315) 373-7887 or visit <http://www.syracusemodelrr.org/>

COOPERSBURG, PENNSYLVANIA, January 2-3, 2016. Club Open House at Coopersburg Area Society of Model Engineers, 5 North Main Street. Enjoy our 35x44 HO scale layout under construction, featuring 3500 ft. of track (58 scale miles) and a helix. Computer-assisted dispatching using JMRI allows up to 12 trains to be operated at once, complete with functional wayside signals. Located in basement of borough building. Admission: Free, donations welcome. Contact Dave Long at (215) 538-0501 or visit <http://www.jdwistle.com/casme/index.htm>

ELKINS PARK, PENNSYLVANIA, January 9-10, 23-24, 2016. Club Open House at Cheltenham Hills Model Railroad Club, 8000 Old York Rd. Celebrate our 65th year! Enjoy our HO layout that includes 1750 ft. of track, 300 car freight yard, engine facility with turntable, and operating lift bridge. DCC control system allows operation of multiple trains with realistic sound. Wheelchair accessibility by appointment. Admission: Free, Donations Accepted. Contact Allen Young, Secretary at (215) 635-9747 or visit <http://www.cheltenhamhillsmrr.org>

PHOENIXVILLE, PENNSYLVANIA, January 9-10, 16-17, 23-24, 2016. Winter Open House at Schuylkill Valley Model Railroad Club, 400 S. Main Street. Enjoy four model railroads covering 1,00 sq ft. Numerous buttons around the layouts bring scenes to life. Enter to win a train set. Admission: Free; donations gratefully accepted. Contact SVMRRC at (610) 935-1126 or visit <http://www.svmrrc.com>

RICHBORO, PENNSYLVANIA, January 2-3, 9-10, February 6-7, 13-14, 2016. Annual Open House at Abington Lines Model Railroad Club, 2066 Second Street Pike (PA Route 232). Attractions include multiple trains with digital control and sound, mainline exceeding 1,000 ft. in length, extensive trolley operation, narrow gauge section, industrial switching area, waterfront with rail car ferries, wilderness waterfall and multiple buildings with highly detailed interiors. Admission: Free. Contact Norma Toll at (215) 598-7720 or visit <http://www.abingtonlines.org>

SPokane, WASHINGTON, March 5-6, 2016. Annual Open House at River City Modelers Club, 1130 E. Sprague Ave. Visit the River City Modelers Club, home of the River City Western HO Scale Railroad. More than 19 scale miles of mainline track on two levels supported by a helix at mid point. The 45 x 45 ft. layout has about 75% of the scenery finished. Admission: Free. Contact Mike Tietz at (509) 535-3462 or visit <http://rivercitymodelers.org>

TRAIN COLLECTOR'S MEETS

GREENWICH, CONNECTICUT, March 13, 2016. Southern Connecticut Model Train Show at Greenwich Civic Center, 90 Harding Road. Enjoy more than 150 tables of trains, books, DVDs, artwork, scenery supplies, and more. Amazing operating layouts in HO, N, and Lionel. Modeling clinics throughout the day. Door prizes. Walking distance from Old Greenwich Metro-North station. Admission: Adults \$7.00, Under 12 free. Contact Ron Rosenberg at (914) 967-7541 or

visit <http://Southernctrainshow.com>

FORT MYERS, FLORIDA, March 12-13, 2016. Scale Rails Spring Train Show at Araba Temple, 2010 Hanson Street. Vendors selling all scales, both new and used. Operating layout displays. N scale raffle layout. The Scale Rails clubhouse open both days for viewing the clubs dual level layout. Admission: Adults \$7.00, Youth \$2.00, children under 12 free. Contact Jim Edmier at (239) 731-0520 or visit <http://www.scalerails.org/>

LAKELAND, FLORIDA, March 19, 2016. H.B. Plant Railroad Historical Society Annual Train Show and Swap Meet at Highland Park Church of the Nazaren: Family Ministries Building, 4730 Lakeland Highlands Rd. Enjoy more than 100 vendor tables selling model railroad equipment in all scales, LEGO trains, railroad memorabilia, train t-shirts, and more. Refreshments available. Free parking. Admission: Adults \$7.00, Youth under 17 free. Contact Gilbert Thomas, Jr. at (863) 412-3090 or visit <http://www.hbplantntr.org/>

THE VILLAGES, FLORIDA, February 6-7, 2016. The Villages Spring Train Show and Sale at Savannah Regional Recreation Center, 1545 Buena Vista Blvd. Enjoy more than 120 tables of vendors representing most scales. Operating layouts. Door prizes and raffle. Refreshments available. Free parking. Presented by The Village Rail Clubs. Admission: \$6.00. Children under 10 with adult are free. Contact Alan Goldberg at (352) 205-4322 or visit <http://villagerailclubs.blogspot.com/>

ELMHURST, ILLINOIS, January 8, 2016. Scale Model Railroad Swap Meet at Elmhurst Christian Reformed Church, 149 Brush Hill Rd. Scale swap meet, no Lionel, tinplate or toys. Presented by The Elmhurst Model Railroad Club. Admission: \$5.00. Contact Steven Cerka at (630) 309-8475 or visit <http://www.emrrc.org/>

PALATINE, ILLINOIS, March 5-6, 2016. High Wheeler Train Exhibition and Show 2016 at Harper College Sports Center, Building M, 1200 West Algonquin Road. 38th annual exhibition featuring 28,000 sq. ft. of model railroading all scales. Four starter train sets given away throughout the show. Door prizes. Kids can operate trains on selected layouts. Many hobby and toy vendors on site. Free parking. Admission: Adults \$8.00, Youth 5-12 \$2.00, Under 5 are FREE. See web site for Kids Pass. Contact Jeffery Jarr, Supt. at (847) 286-8755 or visit <http://www.highwheelertrainshow.com/>

GRIFFITH, INDIANA, January 31, 2016. Winter Railroad Swap Meet and South Shore Line Movie Program at American Legion Post 66, 132 N. Wiggs Street. Buy, sell and swap railroad collectible and scale model railroad equipment meet, followed by a Chicago, South Shore & South Bend Railroad movie presentation. Hosted by the Blackhawk Chapter NRHS. Admission: \$2.00 Suggested Donation. Contact Bill Molony at (815) 834-0835 or visit <http://www.blackhawknrhs.org/>

MUNCIE, INDIANA, February 27, 2016. 25th Annual Muncie Model Train Show at Delaware County Fairgrounds, 1210 N. Wheeling Avenue. Enjoy more than 200 vendor tables, operating layouts, circus memorabilia, free parking. Food for sale on-site. Portion of proceeds used to maintain and improve model train layout at Muncie Children Museum. Presented by The Muncie & Western Model Railroad Club. Admission: Adult \$5.00, under 12 free. Contact Brandon Mundell at (765) 288-6505 or visit <http://www.mwmrrc.org/home.html>

FLETCHER, NORTH CAROLINA, March 4-5, 2016. 26th Annual Asheville Train Show at WNC Ag Center, Expo Buiding, 1301 Fanning Bridge Rd. All scales, all gauges, railroad collectibles, artifacts, operating layouts in several gauges, prototype exhibits, hundreds of vendor tables. Refreshments available. Free parking. Admission: \$5.00 per person. Contact Fred Coleman at (828) 699-0983 or visit <http://www.asheville-trainshow.com/>

NEW BERN, NORTH CAROLINA, February 20-21, 2016. 21st Annual Train Show at New Bern Riverfront Convention Center, 204 South Front Street. Enjoy many operating layouts in various scales. Vendors selling all model railroad merchandise. Hourly door prize drawings. Refreshments available. Admission: \$7.00 ages 12 and up, Under 12 free with adult. Contact Joseph Hofmann at (252) 474-4153 or visit <http://www.carolinacoastalrailroaders.org/2016.asp>

GREENVILLE, OHIO, March 6, 2016. Darke County Model Railroad Club 2016 Swap Meet at Darke County Fairgrounds Youth Bldg., 800 Sweitzer St. Model

railroad equipment, books, memorabilia, operating layout, and more. Refreshments available. Handicap accessible. Admission: Adults \$4.00, Under 12 Free. Contact Joe Worz at (937) 337-0011.

STAFFORD, TEXAS, February 20, 2016. Greater Houston Train Show at The Stafford Center, 10505 Cash Road. Enjoy 20,000 square feet of operating layouts, vendors, displays, and more. Presented by the San Jacinto Model Railroad Club. Admission: Adults \$6.00, Youth 12-18 \$1.00, Family \$12.00. Contact Steve Sandifer at (713) 376-0684 or visit <http://sanjacmodeltrains.org>

SPOKANE, WASHINGTON, March 6, 2016. Spokane Model Train Show at Spokane Fair & Expo Center, 404 N. Havana, Bldg. B, C. & D. Enjoy more than 200 tables of railroad related items for sale model and toy trains, photographs, books, toys, train memorabilia, and more. Modeling clinics, operating model train layouts, Operation Lifesaver exhibit and more. Presented by River City Modelers. Admission: \$6.00 for adults, 12 & under free. Contact Shirley Sample at (509) 991-2317 or visit <http://rivercitymodelers.org>

LA CROSSE, WISCONSIN, January 30, 2016. Great Tri-State Rail Sale at La Crosse Center, South Hall, 300 Harborview Plaza. Enjoy vendors from six states offering more than 280 tables of railroad merchandise. Buy, sell and trade a large selection of model, toy and antique trains, books, magazines, memorabilia, art, and more related items. Presented by The 4000 Foundation, Ltd. Admission: \$5.00. Contact Don Anthony at (608) 781-9383 or visit <http://www.4000foundation.org/>

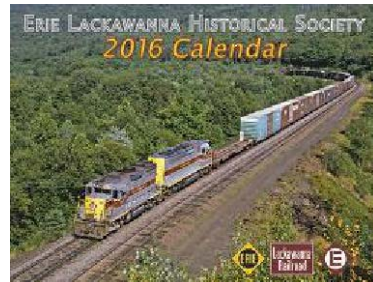
MADISON, WISCONSIN, February 20-21, 2016. Annual Mad City Model Railroad Show & Sale at Exhibition Hall, Alliant Energy Center, 1919 Alliant Energy Center Way. Enjoy more than 90,000 sq. ft. of layouts in all scales, toy trains, clinics, exhibits, vendors (300+ tables) and train rides for kids. Presented by South Central Wisconsin Division NMRA. Admission: \$11 Adult, \$10 Seniors (65+), \$5 Children (5-11), under 5 free, 2 day ticket \$15. Contact Paul Mangan at (608) 835-9577 or visit <http://www.nmra-scwd.org>

CHARLESTON, WEST VIRGINIA, February 20-21, 2016. KVRA Model Train Show at Coonskin Park Lodge, Coonskin Park. Enjoy vendors and dealers, as well as model railroad displays in several scales. Refreshments available. Free parking. Sponsored by the Kanawha Valley Railroad Association. Admission: Adults \$4.00; Children under 12 Free. Contact Joe Horter at (304) 539-6721 or visit <http://www.kvrrailroad.org>

RAILFAN EVENTS

WEST COVINA, CALIFORNIA, February 6, 2016. Santa Fe California Mini Meet at Christ Lutheran Church of West Covina, 311 S. Citrus Street. Enjoy a mini-meet of the Santa Fe Historical & Modeling Society. Several Santa Fe prototype and modeling presentations, with some vendors present. Admission: \$30.00. Contact

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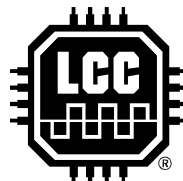
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Charlie Schultz at (909) 518-3641 or visit <http://www.atstfrr.com/>

PHILADELPHIA, PENNSYLVANIA, February 6, 2016. Super Saturday Streetcar Special XXIII at SEPTA Elmwood Depot, Island & Elmwood Aves. Join the Wilmington Chapter for our annual pre-Super Bowl tradition! Our PCC-II streetcar will be joined by line car No. 2194, the last true PCC streetcar on the SEPTA roster (painted in maintenance orange). There will be several photo stops featuring both streetcars on SEPTA Route 15. Admission: \$60.00 per person. Contact Steve Barry at (862) 354-3196 or visit <http://www.wilmingtonchaptertrips.com>

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touching a computer?



The Power of the Notes Not Played

It goes without saying that there are many ways to enjoy the craft of building model trains. For some of us, it involves an interplay between our the models and our impression of real trains. Unless we happen to be professional railroaders, that impression of real trains is informed, at some level, by the simple pleasure of standing trackside and watching trains roll past. For many people, their enjoyment of the hobby is increased by the degree to which a model railroad captures the impression created by those moments.

If watching real trains is one of the major sources of inspiration for model railroaders, it's safe to say that the highlight of train watching is, obviously, that dramatic moment when a train rolls past. I always hope that when someone sees train roll through a model railroad scene I've put together, it invokes the memory of the mass of the locomotives shaking the ground, the collection of percussive noises from the passing cars, and the smells of diesel exhaust and hot brake shoes — all of which typify the climactic highlight of train watching. Add in the emotional engagement a train watcher has with the actual subject, and the experience is amplified.

In photo 1, taken on Bob Fallowfield's HO layout depicting CP Rail's operation in Woodstock, Ontario, in October 1980, a leased Chesapeake & Ohio GP30 leads a hot freight past a very recognizable scene. The whole scene is believable for even the most well-informed local railfan. The CP often leased GP30s from Chessie during that time period, and everything about the scene — including the bridge, barn, and rolling farmland — is completely appropriate for that place and time. For me, operating this train on Bob's layout invoked a memory of photographing leased Baltimore & Ohio units the Toronto, Hamilton & Buffalo Railway not far from the location depicted on Bob's Layout.

Photo 2, however, demonstrates something I think is more important than all of the great things that Bob has done in the scene in photo

1. This photo captures what we do during the other 95 percent of the time we spend watching trains. That is, it captures the time between trains. This time is usually filled taking in the banal details of railroading: roadbed, track, switch stands, idle freight cars, overgrown vacant space around the railroad, and so forth.

I've spent a few decades performing and occasionally teaching music professionally. One of the most important lessons for any accomplished musician is one well suited to being taught by Yoda. Inexperienced musicians are generally fixated with speed and complexity, which is a natural impulse driven by their obsession to be good players. The talented and determined musician comes to discover that they have it only half right, at best. It takes time for a student to master the full complement of skills, which includes the sometimes elusive ability to give context to the complex and dramatic passages in a musical piece. That context is best accomplished by deploying the power of the notes not played. It is the space between notes in the less dramatic passages that sets up the impact of the more powerful parts of a musical performance.

If Yoda was a model railroader, I imagine him instructing young Jedi modelers to witness how Bob performs the art of model railroading in the same way that an accomplished musician might approach an improvised solo. Bob marshals just enough of the commonplace in this scene to make it believable, and therefore make it represent the quiet time between trains. So many modelers only get it half-right when they give in to the temptation to fill their layout with all of the dramatic moments in their repertoire of train watching experiences. Do an inventory of your own memory of and take note of how much time you spent looking at scenes like the one in photo 2. Compare that to the number of times you might have witnessed the drama of the photo 1. If you're honest, and your memory is true, you'll find that this scene and many like it created the context for the life-long memory of that one sunny autumn afternoon in 1980 when you caught foreign leased power on your favorite road, pulling a heavy train out of a river valley, on their knees and roaring in Notch 8.

Hunter Hughson



Above (Photo 1): A leased C&O GP30 leads westbound on Bob Fal-lowfield's HO layout. This scene depicts a rural location on CP Rail's Galt Subdivision, near Woodstock, Ontario, in October 1980.

Below (Photo 2): An assortment of CP Rail boxcars quietly rust next to CP Rail's freight shed at Woodstock. Scenes like this have been replayed countless times while railfans wait patiently for the next train.





Modeling the Union Pacific 2848

Improving the HO-scale Atlas GE U30C with updated details and LED lighting

CRAFTSMAN/Harry K. Wong, model photos by the author



The Union Pacific of the early 1970s was a railroad whose motive power fleet was undergoing a period of transition. With a change in management came a corresponding change in philosophy — from big-budget custom-built double-diesels to mass experimentation toward a more rational approach emphasizing reduced maintenance costs achieved through standardization. Fleet standardization to a smaller number of off-the-shelf locomotive models would help greatly in lowering costs. The goal was achieved via the reduction or elimination of mechanical oddities from the power fleet combined with a corresponding simplification of the spare parts inventory. The result of this effort was the movement toward the following standard locomotive models as new acquisitions.

tions during the 1970s: GE U30C/C30-7, EMD SD40/SD40-2, GP38-2, and perhaps surprisingly, the EMD GP40X. As part of this new policy, UP went on to acquire a total of 150 U30Cs (2810-2959) between April 1972 and October 1976.

Why model a UP U30C?

Because I am a modeler primarily of the Southern Pacific of the late 1970s, readers might wonder why I would bother with a foreign-line locomotive such as this yellow GE. After all, SP rostered 37 U30Cs. However, during the late 1960s through the 1980s, it was common to see UP locomotives intermix with SP power on each other's railroad. Intermixed UP and SP power was made possible via "run-through" pooling agreements that eliminated time-consuming power swaps on expedited trains between the two railroads. While UP SD40s and SD40-2s were typically seen on the SP, it was not that unusual to find a UP GE U30C or C30-7 on Espee rails. I wanted to reflect this aspect of Espee operations with this slightly different take on UP pool power.

Modeling the UP 2848

My approach for this U30C project was not to create a mega-ultra-detailed tour de force, but instead to have a well-detailed "club runner" that would be more than able to hold its own against the premium RTR diesels that now populate our layouts and crowd our closets today. Modelers of most any skill level with just a bit of patience, I believe, could accomplish all the work on this model.

The stock Atlas U30C has "good bones." The model straight out of the box renders all the basic details common to GE U30Cs extremely well. However, for the UP 2848, I felt that the road-specific details on the stock model could be improved to represent more ac-



curately a Union Pacific prototype.

Unboxing the locomotive for the first time, the first thing I noticed was that the rooftop-mounted rotary beacon was in the incorrect position and of a style not typically found on UP U30Cs. I quickly found other detail improvements that required my attention as well.

Cab Details

With my fingers, I gently pried off the stock beacon and mounting plate from the cab roof. At this point, I found it was a good time to separate the long hood and cab from the walkways and handrails of the unit. I began by removing the couplers and draft gear boxes from the locomotive using a small Phillips head screwdriver. Once the couplers were removed, I carefully pried the ends of each handrail with a blunt pair of tweezers to separate the handrails from the sides of the cab. Placing my thumbs over the radiator screens, I gently rocked the long hood and cab to slowly separate them from the walkway.

Once the inside of the cab became accessible, I plugged the resulting hole with a short length of Evergreen 0.030-inch diameter styrene rod. I secured the rod with a tiny dab of Tamiya "Light" Liquid Cement applied from the in-

side of the cab. Once the glue had set overnight, I came back with a pair of flush-cut nippers to trim the rod flush with the cab roof.

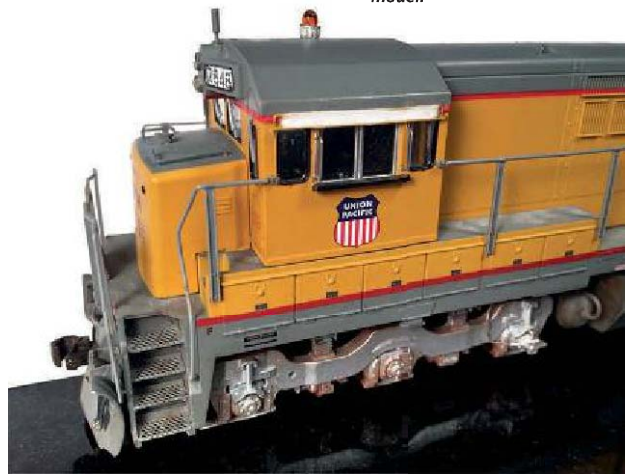
Before installing the new replacement beacon, I studied numerous prototype photos of UP U30Cs. For my time period of the mid-to-late-1970s, UP's U30Cs mostly employed a gumball-machine-shaped amber rotary beacon manufactured by Western-Cullen. Details West makes an excellent rendition of this Western Cullen D-312 beacon (#235-126). The amber lens of the Details West gumball is pre-cored for installation of a small light source, such as a small-format LED or incan-

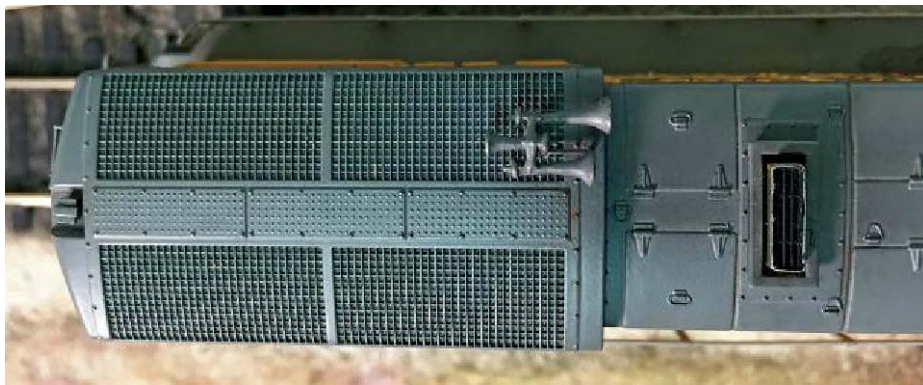
Prototype

Freshly repainted just three years after its delivery, U30C 2847 is at Denver, Colorado, on July 24, 1976, leading a U50C. — John Tudek photograph, Kevin EuDaly collection

Fireman's Side

Canvas sunshades, full-width armrests, dual cab mirrors, a repositioned rotary beacon, and firecracker antenna distinguish this locomotive from a standard Atlas model.





Radiator and Horn

A Leslie RSL-3L-R3 air horn with an air line made of 0.015 wire are mounted above the radiator section.

descent bulb. I drilled a new 0.052 (No. 55 drill) hole centered on the roof 0.4755-inches behind the face of the cab to install the new beacon. I'll discuss how to light this beacon later in this article.

Per photographs, I mounted a firecracker radio antenna (Detail Associates 1803) on top of the forward headlight assembly by drilling a No. 76 0.020-inch hole. I secured the antenna with Pacer Canopy Glue.

To match the existing paint on the cab roof, I mixed equal parts of Polly Scale CP Rail Gray and Polly Scale Erie Lackawanna Gray to create a very close match to Atlas' rendition of UP Harbor Mist Gray.

A signature feature of UP diesels is the flexible canvas sunshades mounted above the side cab windows. I modeled this by using two pieces of 0.012 phosphor bronze wire bent to represent the support rods. The "canvas" itself was created from a tiny strip of Kleenex. I attached the Kleenex to the support rods with thinned white glue and formed the "canvas" awning to a droopy shape on each side. Repeat on the other side.

The UP-style cab armrests were created from 0.030 x 0.060 Evergreen styrene strip cut to 0.495-inches and finished off with a bit of Tamiya semi-gloss black paint. I also attached rectangular cab mirrors to each side of the sliding cab windows using the tall mirrors provided in Details West Mirror assortment (235-357).

For the front and rear faces of the cab, I replaced the oversized stock wiper arms with finer replacements from Detail Associates (229-2314).

The Long Hood

On the section of long hood immediately behind the cab, I added a J-shaped vent pipe to represent the toilet vent. For this, I drilled a No. 78 hole and employed a short length of 0.015 phosphor bronze wire from Tichy Train Group. I secured the vent pipe from the inside of the shell with a tiny dab of ACC applied from the blunt end of a toothpick.

Air Horns

Prior to 1979, UP preferred to mount horns in a rearward location on top of the hood above the radiator core. The reasoning was to keep the horns from freezing up during inclement winter weather. To reflect this, I shaved off the stock horn from its existing location behind the cab with a No. 11 blade, leaving the mounting stub of the plastic horn embedded inside the mounting hole in the long hood. By leaving the mounting stub in the hole there is less need for body filler. Body filler tends to shrink and form sink marks in holes over time when left unsupported.

For my modeling era, the proper horn location is mounted at the forward edge of the radiator grilles on the "batwing" area of the U30C. I drilled a 0.040 hole using a No. 60 drill bit to mount a Details West (235-190) Leslie RSL-3L-R3 air horn at the new location. The hole should be drilled perpendicular to the surface of the batwing.

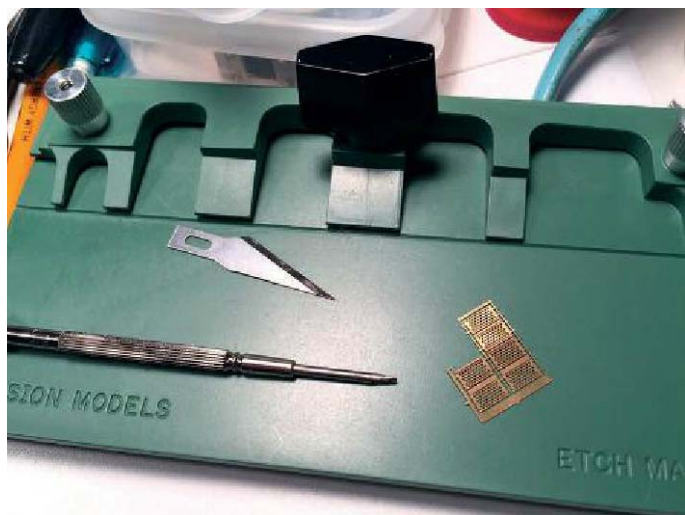
Per photographs, I also added a 0.015 air line to the air horn mounted directly in front of the air horn bracket.

Pilot Details

For the pilots, I wanted to try out the scale-width draft gear housings offered by Details West. This is a detail seldom noticed by most, but to me it makes a big difference in realism. To accomplish this, I first removed the stock draft gear box on each pilot and chopped off the front of the stock draft gear box, so it would sit flush behind the inside face of the pilot plate. Before mounting the GE scale buffer plate, I filled in the top and bottom of each coupler opening with strips of 0.030 x 0.060 styrene strip, leaving a horizontal slot for the coupler shank.

I also swapped out the stock couplers for Kadee scale-head No. 158s. With a flat jeweler's file, I carefully shaved down the edges of the fat part of the shank until the shank would fit snugly through





the scale-width opening in the Details West GE buffer plate.

Once I was satisfied with coupler operation, I removed the couplers and mounted the GE scale buffer plate with ACC to the face of each pilot. I painted the scale buffer plate with UP Harbor Mist Gray using the formula discussed earlier.

Out of the box, the snowplow supplied by Atlas is best suited for other railroads, so I looked in my stash of parts for a snowplow that would be a better match. The Details West (235-368) GE snowplow is an exact match against prototype photos of the 2848.

Before mounting the plow, I replaced the stock plastic MU hoses with aftermarket equivalents from Details West (235-265). I prefer the MU hoses from Details West because they are easily positionable and take paint well. Ensure that each MU hose cluster is properly aligned to fit straight through the openings in the snowplow first prior to securing the hoses to the front pilot.

Once happy with how everything fit, I added 0.008-inch diameter grab irons from BLMA to the top of the plow by drilling two holes per grab iron using a No. 82 drill bit.

Next, I painted the plow assembly the same mix of 50:50 Polly Scale EL gray with Polly Scale Ca-

nadian Pacific Gray and attached the painted plow to the front pilot using ACC.

For the rear pilot, it was a simple matter of taking out the remaining pair of Details West MU hoses from its package. As with the MU hoses up front, I painted these a shade of rubbery black before installation. Any shade of dark gray or grimy black will suffice for this step. With a fine paint brush, I also painted each of the MU hose brackets located above the hoses my 50:50 mix of Polly Scale CP gray and EL Gray to match the stock Atlas UP Harbor Mist Gray.

The last touch on the pilots was to drill a No. 76 hole for the train line air hose and angle cock. For the air hose, I used Details West 235-268.

Moving on behind the pilots, I replaced the stock steps in each stepwell with E-100 etched brass step assemblies from Mike Rose Hobbies. Brian Banna designed these step kits specifically for Atlas GEs. Each step kit is provided as a series of flat etchings on a single 2x2-inch fret. I used an old Etchmate 3C photo-etch bending fixture to help bend each step assembly to the proper shape. Due to its extremely thin cross section, the forward edge of each step was a bit more challenging to bend. I resolved that by using the edge

of the blade of a jeweler's screwdriver to gently force the bend after the step was firmly clamped down in the bending fixture. Once all the etched steps were bent, I removed the center portion of the stock steps with an X-Acto knife fitted with a No. 11 hobby blade. Be sure to leave a little bit of a "ledge" on each side to provide a mounting surface for your new steps. Use ACC to secure each etched step into the stepwell.

Truck Details

Since Union Pacific locomotives during this period wore silver trucks, the truck details are highly visible to fellow modelers and operators. So this should be an area of focus for your model.

With the shell and walkways completely separated from the underframe, I removed the trucks in preparation for detailing. I unscrewed the extra weights and popped off the worm gear covers with a jeweler's screwdriver. Disassemble each truck completely by first removing the long gearbox cover with the aforementioned screwdriver. Set the running gear and truck sideframes aside for further work.

Most of the details to be added are to the front truck underneath the cab. For the front truck sideframe on the fireman's side, I added a GE wheelslip sensor to the

Etchmate

I used the combination of a Mission Models Etchmate, a No. 11 blade, and a jeweler's screwdriver to bend each etched step into shape.

Etched Steps

Perforated GE steps made of etched brass were procured from Mike Rose Hobbies. Applied to the model using ACC, the E-100 step kit is a perfect fit for the Atlas U30C.



Truck Detail

Wheel slip modulation devices, a speed recorder, re-rail frog brackets, and a scratchbuilt chain assembly help elevate this model to a new level of fidelity.

Brake Chain

The brake chain assembly is constructed from multiple pieces of Evergreen styrene and a length of etched chain from Athabasca Scale Models.

No. 3 axle using Details West 235-350. At the top of the sensor assembly, I attached a sensor cable by drilling a No. 80 hole to install a length of 0.012-inch wire. The wire was pre-bent to shape using my fingers and a round jeweler's file.

On the engineers' side, I added a speed recorder with cable using Details West 235-284 to the No. 2 axle by drilling a No. 58 hole through the journal cover. On this side, I also added a Details West 235-350 wheel slip sensor to the No. 1 axle to match photos.

After delivery from GE, UP's U30Cs were fitted with one re-rail frog per truck on the engineer's side. However, by the late 1970s, many of these units had

lost their re-rail frogs, leaving only the mounting brackets in place. According to my photos of UP 2848, I mounted re-rail frog brackets above axle Nos. 2 and 4 using Details West 235-293. For this, be sure to consult photos when modeling — the mounting location and presence of a re-rail frog will vary depending on the unit number and period modeled.

Brake Chain Assembly

After trying to ignore this detail in the interests of durability, I concluded that my UP U30C looked a bit bare without a brake chain assembly on the front truck.

This feature isn't often modeled on GEs, but with a few moments of work, I found that this detail made a big difference in giving the front truck the "busy" and more accurate look that I was seeking. On the advice of my friend, Elizabeth Allen, I used etched brass chain from Athabasca Scale Models — the smallest chain available in set No. 1003 — and bits of Ev-

ergreen styrene to construct the brake assembly.

Each of the chain guides is built from 0.015 x 0.125 Evergreen 116 styrene strip. The backing plate for the upper chain guide is cut from a 0.122 x 0.250-inch rectangle of the Evergreen 116 styrene and notched in one corner. The chain guide itself is a 0.060-inch square of Evergreen 261 C-channel mounted onto the backing plate. I glued the center chain guide assembly onto a shim made of the same Evergreen 116 styrene and mounted the entire assembly to the body shell just aft of the jacking pad on the engineer's side.

The lower chain guide assembly attached to the front truck was a slightly more complicated affair. I first created a mounting base for it by cutting a 0.90-inch length of Evergreen 143 0.060 x 0.040-inch styrene strip. I mounted the base onto the truck sideframe between the No. 2 and 3 axles.

The backing plate for the lower chain guide assembly is also formed from Evergreen 116 sty-

Brake Chain Assembly



rene cut to a 0.128-inch wide x 0.150-inch tall rectangle and then trimmed to the shape of a parallelogram. Once cut, I glued the parallelogram to the mounting base.

For the lower chain guide, I glued on a 0.060-inch length of Evergreen 261 C-channel onto the parallelogram. Matching photos, I added two nut/bolt heads shaved from On3 1.25-inch nut/bolt/washer assemblies from Grandt Line.

I built the brake lever by cutting out a sliver of 0.015 x 0.188 Evergreen 118 styrene strip. The lever dimensions are roughly 0.060-inches wide x 0.1710-inches deep. I added a 0.010-inch shim, so the brake lever would form a friction fit into the slot in the truck sideframe. Leave 0.10 inches of the brake lever protruding from the side of the truck.

To provide a little bit of bolt detail for the end of the brake chain, I drilled a No. 77 hole into the brake lever and installed a complete Grandt Line No. 93 1.25-inch On3 nut/bolt/washer assembly.

With all this work, I was not satisfied with the boxy cross-section of the upper chain guide pipe provided on the stock Atlas shell. To improve its appearance, I gently scraped off the edges of the "square" pipe repeatedly with a No. 11 blade, so it would have more of a rounded cross section. To prepare for installation of the brake chain, I drilled a small hole at each end of the pipe with a No. 77 bit.

Because I felt that a single continuous length of brake chain between all the chain guides and truck would require too much droop to maintain proper truck rotation on an HO layout, I elected to break up the chain detail into three separate sections. One section of chain is mounted on the truck. Two additional sections join the upper chain guides under the sill.

With all the details applied to each truck sideframe, I gave each a light coat of Scalecoat "Oil &

Grime" to provide a nice muted flat aluminum finish ready for weathering.

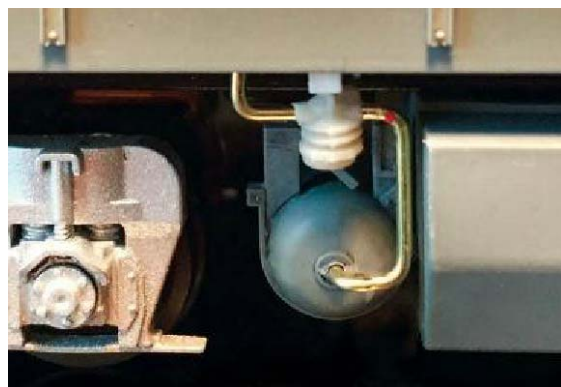
Air Tank Details

At first, I felt the stock air tank details on either side of the fuel tank would suffice for a "runner" model once weathered, but the more work I put into other areas of the model, the more silly the molded-on details seemed on the air reservoirs.

Instead of the time-consuming task of replacing the air tanks completely, I elected to remove the molded-on air lines on the face of each air reservoir, replacing them with 0.033-inch brass wire (Detail Associates 229-2509) bent to shape with pliers and a round jeweler's file. The spherical end caps on each end of the air tanks are easily removed with your fingers. With each end cap now separated, I carved off most of the molded-on air lines with a No. 11 blade from my hobby knife. I cleaned off the remnants with a sanding stick. Finally, I drilled a 0.020-inch (No. 76) hole into the center of each end cap to install the 0.033-inch air lines separately.

Per prototype photos, I also added drain cocks from the GE air tank kit (Details West #235-263) to each of the air tanks on the engineer's side. A large Salem air filter (SF0001) from Layout-LoE.com was also added and plumbed to the rear air reservoir on the engineer's side with 0.033-inch diameter brass wire.

A small Salem air filter from the same SF0001 air filter set was mounted to the area just above the front air reservoir on the same side. Because the smaller Salem filter lacked a sturdy mounting point to the locomotive, I fashioned a large bracket made of a 0.480 length of 0.080 x 0.100-inch Evergreen 165 styrene for the 0.015-inch air filter piping and glued it using ACC to the frame edge. For a slightly larger mounting surface, the back of the small Salem air filter was shaved down



Air Line Detail

A single length of Detail Associates 229-2509 0.033 brass wire was bent to shape to connect the Salem air filter to the rear air reservoir.

slightly and secured to a wedge cut from the same stick of Evergreen 165. (The mounting bracket for the small Salem air filter is shown in the bottom right photo on the opposite page).

Following the lead of my friend, John Albert, I added the appearance of I-beams along the underframe above the fuel tank and trucks using strips of 0.080-inch Evergreen styrene C-channel. Installation is relatively straightforward once I removed some excess frame material around the rear trucks using a large flat file. I also notched the C-channel to fit around the styrene mounting base for the large Salem air filter aft of the fuel tank.

Replacing the Bell

Because the stock bell resembled a cheap plastic stadium horn leftover from a football game, I elected to build a new bell assembly instead.

Following photos, I constructed a mounting bracket using a 0.190 length of Evergreen 261 0.060 styrene C-channel. Using my pin vise, I drilled a No. 73 hole into the channel to mount a bell from Detail Associates (229-1201). After a splash of Harbor Mist Gray, I mounted the bell assembly to the frame just ahead of the fuel tank on the engineer's side.

Lettering & Decals

One of the "fun" and distinctive features of UP 2848 is the mismatched pair of number boards on the cab. Somewhere along



New Bell

The stock bell was replaced with a Detail Associates 229-1201 "Rooftop Bell" mounted to a section of Evergreen 262 C-channel. A strip of 0.010 styrene was added to provide a larger gluing surface.

the way during the mid-1970s, a "temporary" replacement number board with haphazardly stenciled road numbers was installed on the fireman's side of the cab. I used Microscale's 87-1303 — a stencil-font alphabet decal set — to reproduce this. Before decaling, I removed the clear number board assembly and divided it into three pieces using a razor saw. Since I wanted to illuminate the headlights directly with LEDs, I discarded the clear plastic for the headlight but retained the left and right number board glass. When decaling the fireman's side number board, there is no need to get your numbers perfectly in alignment, for once, so enjoy this rare carefree step of the project! Afterwards, I also added a fire extinguisher location decal to the front of the cab door from Microscale decal set 87-36.

In May 1980, UP's mechanical department decreed that new and fully repainted locomotives would

no longer display the 10-inch road numbers from the cab sub-base. Some units also had the "UP" removed from the reporting marks on the nose during this time. Following the prototype photo from Eric Blasko, I elected to reproduce this lettering variation on the nose and flanks of my GE. However, I first needed to remove the existing lettering and numbers from the same locations.

Removing the Factory Lettering

To remove the factory lettering on the nose, I cut out a piece of paper towel just slightly larger than the road numbers I wanted to remove. Place the paper towel over the lettering. With a small brush dipped in Micro Sol, soak the paper towel with Micro Sol over the factory lettering for five to seven minutes. To keep the surface wet, reapply Micro-Sol as needed while you are waiting. Use the rounded end of a toothpick, or the end of a piece of 0.060 x 0.060-inch strip styrene to gently chip off the lettering. If the lettering easily breaks free, add a few drops of tap water to help contain the broken lettering. Be careful to scrape very lightly in gentle horizontal strokes. Avoid "digging" so as not to mar

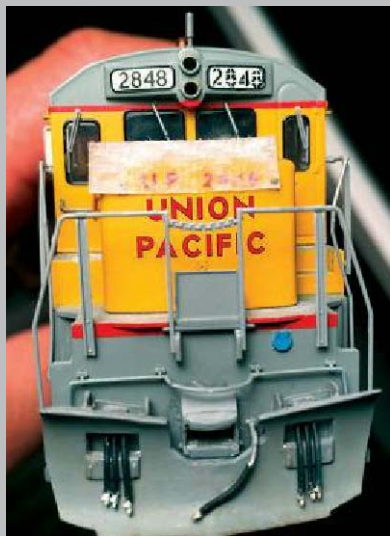
the paint underneath. Have a bunch of clean Q-tips handy to remove the flecks of broken lettering from the surface. Use a clean Q-tip every time you wipe off the broken lettering. Repeat the same procedure to remove the "UP 2848" lettering underneath the cab as well.

On the nose, I applied a new six-inch-tall "2848" roughly centered on the nose per the September 1980 prototype photo using Microscale decal set 87-36.

Keen-eyed readers will notice that the engineer's side sub-base on my model retains the 10-inch tall UP road numbers! I do not plan on having more than one UP U30C to my fleet, so I chose to have one unit represent two different eras with a single unit. With differences in lettering, the engineer's side will represent a late-1970s appearance, while the fireman's side and nose represents a mid-1980 appearance. I'd love to build two UP U30Cs, one for each lettering variation; but alas, my time and resources are limited.

Another standard feature of UP locomotives of the 1970s is the Automated Car Identification (ACI) labels affixed to the handrail stanchions on each side of my UP U30C. For those unfamiliar with this practice, ACI labels were an

Removing the Factory Lettering



early form of computerized barcodes used to automatically identify rolling stock and equipment. However, the system failed to be reliable due to the naturally grungy nature of railroad equipment and was subsequently dropped after February 1978.

Because the ACI labels on the 2848 are mounted to vertical handrail stanchions, I constructed a plate for each ACI label using 0.010 x 0.125-inch Evergreen styrene strip cut to length. After painting each backing with my mix of UP Harbor Mist Gray, I added an ACI label from Microscale decal set MC-4280. The ACI plates were attached to each stanchion using ACC with a dab of MicroPrep applied first to strengthen the bond between the Delrin handrails and the styrene ACI plate.

DCC & Lighting

Until this project, I was a traditionalist who preferred incandescent bulbs for lighting my HO locomotives. However, I found it difficult to ignore the constant march of technology — LED lighting now provides several advantages to me for illuminating my HO diesels. First, I grew weary of replacing burned-out bulbs on a finished locomotive. Having to open a buttoned-up locomotive for maintenance under the shell is a bother, especially when there is often a multitude of bulb wires to contend with when cramming the shell back on after repairs. To me, this “shell-cram” step of a diesel project is perhaps the most nerve-wracking experience in completing a model. Wires and solder connections get stressed, or parts of the shell never seem to sit down quite right once everything seems to be put back together. Not fun.

In contrast to bulbs with their thicker wires, LEDs and typical LED wiring is usually more compact and flexible, fitting easily underneath the shell with nearly no space constraints. Proponents of bulbs might point out that surface-mount LEDs are awfully

small and difficult to solder. To eliminate this issue, I shopped for LEDs prewired with extremely thin copper magnet wire. Magnet wire is typically thinner than most human hair, yet I found it to be sturdy enough with careful, yet casual, handling.

The biggest roadblock that held me back from LEDs was the color emitted from most “white” LEDs. To me, the color was either too yellow or too blue to resemble the prototype’s incandescent headlights. For me, tinting the LEDs with transparent orange paint gave inconsistent results. My opinion on LEDs changed after I purchased and played with a couple of different sets of surface-mount LEDs. After a short bit of experimentation, I found that “Sunny White” surface-mount LEDs produced the light output I wanted. LEDs are also much brighter than the dim 1.5 bulbs that I am used to. Win!

The other roadblock that slowed my adoption of LEDs was the price. A single surface-mount LED cost nearly \$3 each for some sizes a few short years ago. However, as with most electronics, component prices drop once there is widespread adoption of the technology. Nowadays, I find LEDs from eBay are the most economical and practical source for me. I found dealers selling prewired sets of surface-mount LEDs for less than 80 cents apiece.

With all these barriers now stricken, I placed an order for ten pieces of prewired sunny white 0402 format surface-mount (SMD) LEDs. These LEDs are positively tiny but put out an impressive amount of light. Coming from overseas, the LEDs arrived in the mail about two weeks later.

To drive the LEDs, I wanted to have the simplest wiring configuration possible under the hood. I sought a DCC decoder board that would not require the use of external resistors. Because I had good prior experience with decoders from TCS, I selected that com-



pany’s A4X decoder board, which provides native onboard support for LEDs. Just hook up the wires and go! Well, almost.

I had never wired up surface-mount LEDs before, so I wanted to be extra-cautious during the installation process. To ease the task of troubleshooting and to minimize aggravation, I tested the LEDs every step of the way. For a power source and tester, I used an “Intelligent LED Tester” from Ngineering.com. This LED tester provides a pair of terminals powered by a 9V battery without the need for additional resistors.

LED Installation

I began by wiring the rear headlights first with the 0402 LEDs. First, I popped out the stock number board and headlight assembly. Since I would not be using the stock headlight rods with the LEDs, I divided the clear headlight and number board assembly into three pieces with a razor saw. Discard the center portion and retain each number board insert. Repeat for the front headlights.

For each headlight hole, tape down the wire pair about one inch behind the headlight housing using an inch or so of Kapton tape. To allow for precise adjustment within the lens area, leave a little slack in the wire between the tape and the housing. The LED should sit just slightly behind the face of the headlight housing. Adjust with a coarse pair of tweezers. Once

Rear Quarter

New details in this view include a Salem air filter, air piping, air reservoir drain cock, and an ACI placard. Note also the dusty walkway, oil seeping from the bottom of the hood doors, and blackened radiator and auxiliary intakes.

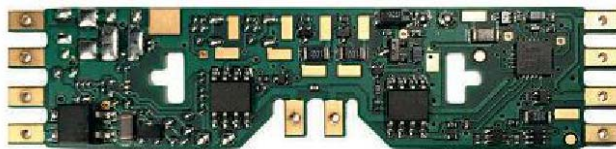


Shell Wiring

The use of magnet wire greatly helps to minimize the volume of underhood wiring. Compare the ten strands of magnet wire on the left to just four thicker wires on the right.

TCS Decoder

Onboard LED support on the TCS A4X decoder eliminated the need for inline resistors clogging up the inside of the hood.



in place, test your LED using the LED tester. While the LED is illuminated, observe the brightness of the LED from all normal viewing angles and adjust as needed.

Once you are satisfied with positioning and brightness, install a headlight lens over the LED. For this, I used clear headlight lenses — Details West 235-341 — over each LED. To secure the lens, I dipped the pointy end of a cocktail toothpick into a small drop of Canopy Glue, wiping off some of the excess before lining the inside of the headlight opening with the

glue from outside the shell.

Use the LED tester to illuminate the LED. Check for brightness of the LED from multiple angles. Make any last-minute adjustments to the LED or lens as needed.

Finally, secure the LED in place using canopy glue from inside the shell. Allow it to dry overnight. We will hook up the headlight wires to the decoder once we finish all the lens installations.

Repeat this same procedure for the two front headlights after you install the LED in the beacon. Because the 402 LEDs were too large for the front headlight housing, I purchased 0603 format LEDs, which I used for the rest of the project. I felt that both LED formats were plenty bright for my needs.

Installing the LED for the Rotary Beacon

Since the rotary beacon is supposed to emit a warm orange flash, I found it necessary to tone down the brightness of the LED. Given that these rotary beacons were essentially “dirt magnets,” I didn’t want my beacon to outshine the headlights.

Instead of using additional resistors, I employed a very low-

tech technique that my friend Chris Palomarez suggested. Simply splash a coat of Tamiya clear “Smoke” acrylic paint over the LED! Thread the LED assembly into the beacon housing, illuminate, and evaluate. If it’s still too bright, pull the LED back out, apply another coat or two of clear “Smoke” paint, and retest until you are satisfied with the luminosity.

Classification Lights

Prior to the mid-1980s, U.S. and Canadian railroads used classification lights on locomotives as a way to denote train class and identification. On many railroads, “Extra” (non-scheduled) trains illuminated clear-colored class lights. Given that the nose of my Atlas U30C already includes a pair of clear class light lenses, this project was a natural for illuminated class lights.

I installed LEDs for my class lights using the same basic method as for the headlights. The only exception is that I lowered the brightness of these lights just a bit with a thin coat or two of Tamiya Smoke paint before final installation.

Decoder Installation

Now that all the LEDs were installed in place and verified to work, my attention turned to the electronics on the locomotive chassis. I wanted to have the simplest wiring possible under the hood. I discarded the stock Atlas motherboard and LED lighting in favor of an A4X decoder from Train Control Systems. The TCS A4X already has onboard support for lighting LEDs without the need for further resistors.

After hooking up the motor leads and pickup wires from the trucks, I soldered the leads for the LEDs to the appropriate pads on the TCS A4X — one pair of LEDs at a time.

Pay particular attention to the polarity of each wire lead. Your LEDs will not light if the polarity is reversed. Before soldering, confirm polarity with your LED tes-

Surface-Mount LED Installation Tips

- Purchase the prewired LEDs with the longest wires.
- Ensure that the wires are thin magnet wire.
- Magnet wire can be a little tricky — handling them is a little like trying to comb long hair! Avoid tangling them as much as possible.
- Label and mark the positive and negative leads with a Sharpie pen on masking tape.
- The longer wire in a prewired LED set is the Anode (Positive) side.
- Test your LEDs at every step. I used an “Intelligent LED Tester” from NGineering.com
- Use Kapton tape to secure the magnet wires to the locomotive.

ter. After soldering on each LED, I verified operation of each headlight function on my programming/test track. For those keeping track, I mapped my beacon to F1 and my class lights to F3. I tuned the rotary beacon effect so that it would best simulate the flash rate and duration of its prototype. Using JMRI Decoder Pro, I made the following settings:

For those without JMRI Decoder Pro, the equivalent CV settings I prefer for my rotating beacon effect are as follows:

CV 119 -
Max Bright Duration = 2

CV 120 -
Beacon total light cycle = 4

CV 118 -
Beacon Min Brightness = 1

CV 121 -
Beacon Mid Brightness = 9

CV 122 -
Beacon Max Brightness = 15

Once everything is wired and working, carefully make any adjustments to wire routing. Gently mount the shell onto the chassis. Be careful to keep any wires away from the rotating motor shafts and other moving parts. Use additional Kapton tape if needed.

Weathering

My golden rule for weathering is the same as I apply to modeling in general — seek out and study as many photos of your prototype or similar prototypes as much as possible before commencing work.

Following a photo of UP 2848 from Eric Blasko, I wanted to represent this unit as it had appeared freshly painted in September 1980, so the amount of weathering is generally quite light. However, GE's of this generation had a high propensity to leak lube oil in large quantities, so I needed also to represent that key "feature" of the 2848.

Taking a trick out of a military modeler's scrapbook, I used the fluid from a bottle of black liquid



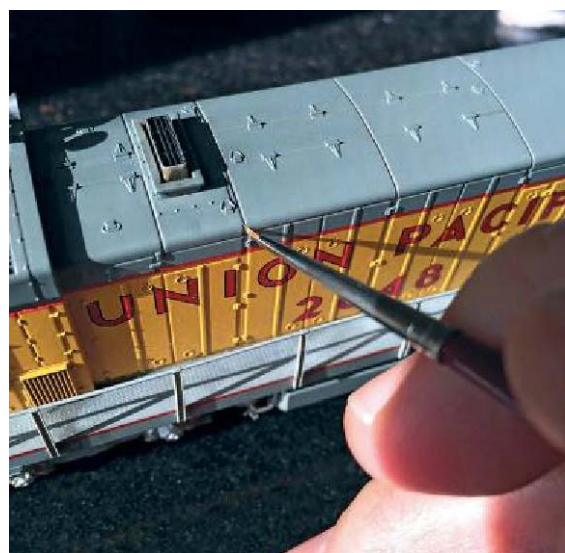
shoe polish to represent spilled lube oil on the locomotive. Comparing against the prototype photo taken in 1980, I used a small brush to create a tiny pool of oil on the walkways near the radiator section. With a smaller brush, I also created vertical streaks down the sides of the fuel tank and on the rear truck. The shoe polish I used is water-based. Cleanup was easy with a moistened Q-tip.

I also added the appearance of dirt and mud spray on the front and rear faces of the fuel tank and trucks with several light washes of burnt umber artists' oils thinned with Gamsol artists' solvent. Pan Pastel chalks were also applied in the same areas and on the horizontal surfaces of each truck sideframe using the small applicators from Pan Pastels.

Railroaders don't get to wipe their feet much before boarding a locomotive, so I applied tan and gray artists' chalks from Pan Pastel to the top surfaces of the walkways along the hood and the top of the nose.

The radiator grilles were also blackened with a thin wash of raw umber and black artists' oils.

For exhaust buildup, I applied a light tint of thinned (10:1) Tru-Color weathered black with my Paasche airbrush to the top surfaces of the hood and batwing ar-



cas adjacent to the exhaust stack to complete the model.

Credits & Acknowledgments

The author would like to thank John Albert, Elizabeth Allen, Eric Blasko, Gary Christensen, Ryan Martin, Jeff Meyer, Paul Ellis, Christopher Palomarez, Scott Sanders, Koos Fockens, and Colin T Hart, Stephen Priest, MMR, and Todd Gillette for their support on this project. Without them, this project would likely still be languishing in a dark dusty corner of my workbench! **RMC**

Pan Pastel Weathering

I applied weathering chalks from Pan Pastel in multiple passes to achieve the effect of dust and dirt to the walkways and underframe components.

Pin Wash

I used a 15/0 Artists brush dipped in a thinned mix of burnt umber and black artists' oil to provide contrast to the panel lines on the roof.

Recommended Materials

Atlas

10 000 089 Phase 3 U30C Union Pacific

Athabasca Scale Models

1003 Brass Chain Assortment

BLMA

4510 18-inch Drop Grab Irons (20)
- 0.008-inch wire

Detail Associates

229-1201 EMD Rooftop Bell
229-1805 "Firecracker" radio antenna
229-2314 Windshield wipers
229-2317 Windshield wipers
- GE standard cab

229-2509 Round Brass Wire
(0.033 diameter)

Details West

235-126 Western-Cullen
D-312 rotary beacon
235-190 Leslie RSL-3L-R air horn
235-266 MU Hoses - 3-cluster
235-268 Air Hose -
Locomotive w/extension and angle cock
235-284 Speed recorder
235-293 Rerail frog with brackets
235-341 Headlight enhancement lenses
pkg (10) - clear acrylic 6-inch
235-350 Wheelslip Modulation Device

235-263 Air tanks for 4- & 6-axle
GE locomotives
235-284 Speed Recorder w/Cable Line
235-368 GE snowplow
235-377 Scale-width GE draft gear

DrillBitCity.com

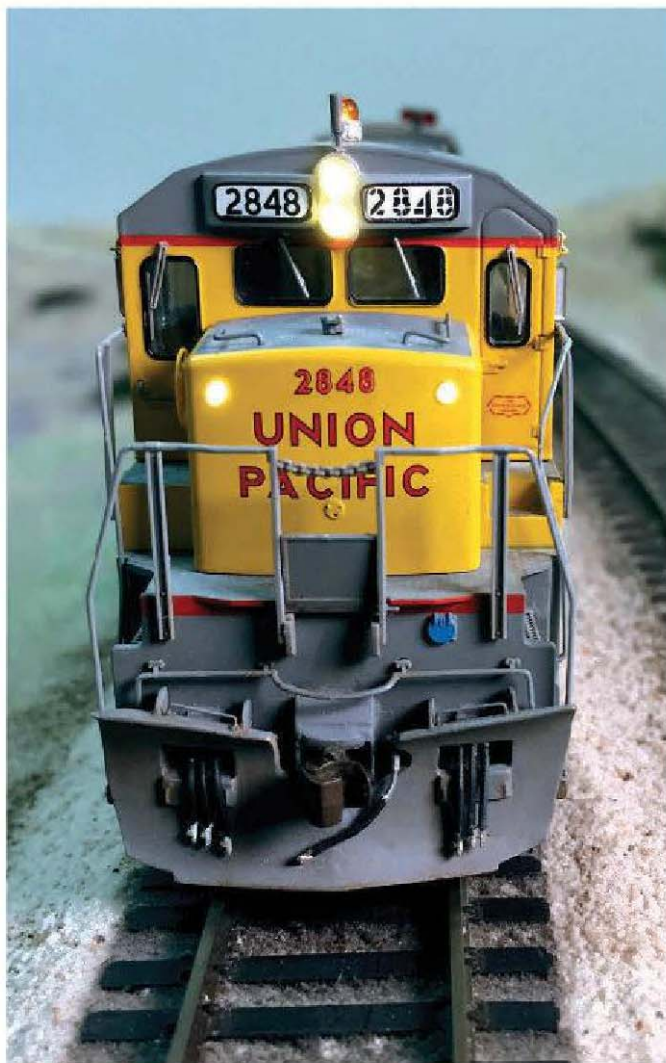
No. 82 drill bits

Evergreen Styrene

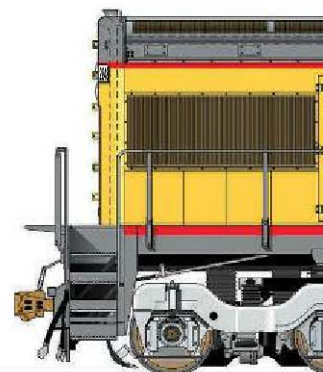
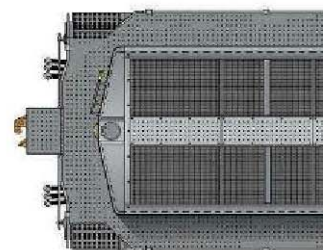
106 0.010 x 0.125-inch Styrene strip
116 0.015 x 0.125-inch
Evergreen styrene strip
133 0.030 x 0.060-inch Styrene strip
143 0.040 x 0.060-inch
Evergreen 143 styrene strip

Finished!

Released from the Union Pacific's Shops in Salt Lake City, UP
2848 takes the main on the Overland Route toward California.



All drawings created expressly for
Railroad Model Craftsman by
Stephen M. Priest, MMR
copies may be made for
noncommercial use only
HO Scale



210 0.030-inch styrene rod
262 0.080-inch C-channel

Kadee

No. 158 scale couplers

LED-Baron (via eBay.com)

30 pieces SMD LED 0402

Sunny White prewired with 35cm XL
Enameled Copper wire

Layout-IOE.com

SF0001 Salem Air Filters

Microscale

MI-2 Micro-Sol

87-36 Union Pacific Diesels

(1947-1975) Decal Set

87-1303 4-, 7- & 8-inch Stencil Lettering

for Patches & Leasers No. 2 – Black
MC-4280 ACI Plates (1967-77)

Mike Rose Hobbies

E-100 Etched Brass Steps

for Atlas U30C, U33C, U36C & C30-7

Ngineering.com

N8021 Intelligent LED Tester

Pacer Industries

PT-56 "Formula 560" Canopy Glue

PanPastel

30701 Weathering Kit – Rust & Earth

30702 Weathering Kit

– Greys, Grime & Soot

Minuteman Scale Models

S 2003

– Scalecoat II Graphite and Oil

Tamiya

87038

Extra Thin Liquid Cement – 40ml

X-19 Smoke Acrylic Paint

X-26 Clear Orange Acrylic Paint

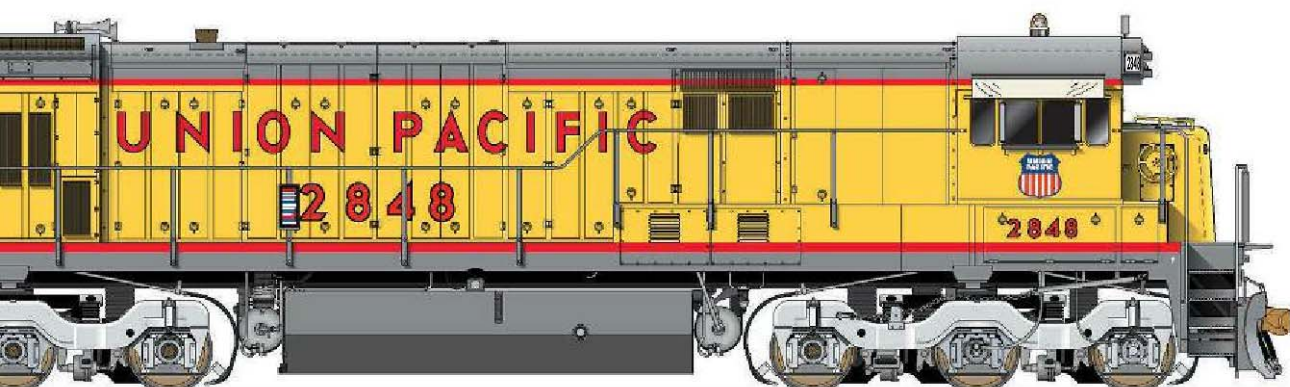
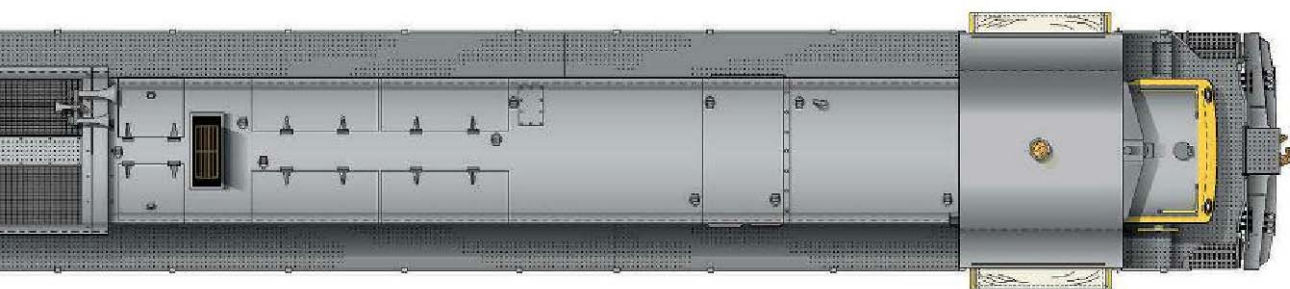
Tichy Train Group

0.012 wire

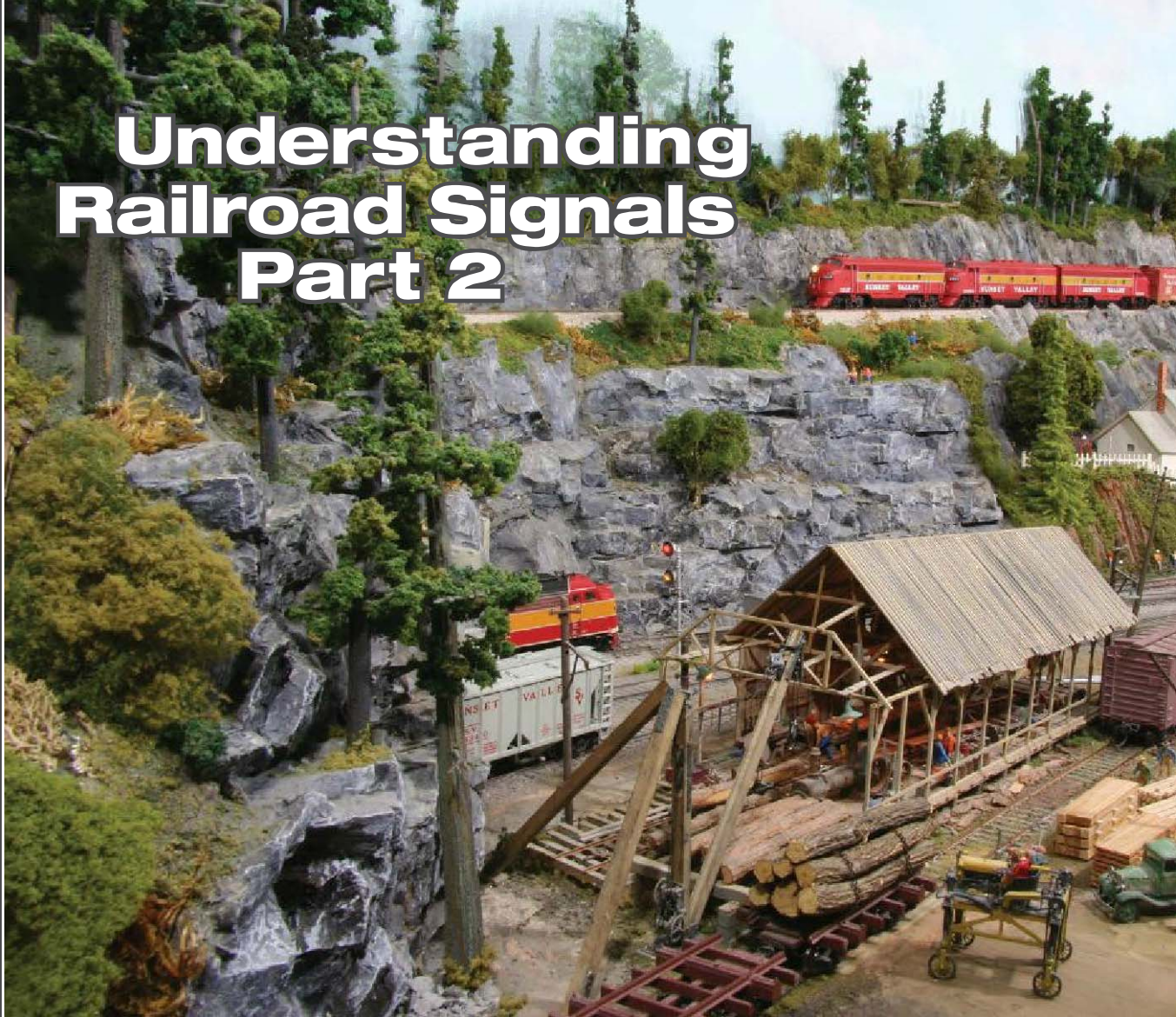
0.015 wire

TruColor Paint

TCP-171 Weathered Black



Understanding Railroad Signals Part 2



Train 202

With a Sunset Valley freight rumbling along the Crescent City Branch on the track above, SP Train 202, a hot-shot reefer train, peeks into view with a signal displaying a red-over-yellow aspect — a diverging-approach — signifying that it is lined to take the siding at Riddle, Oregon, and must approach the next signal prepared to stop. The sawmill in the foreground, Sonke Mill, is the smallest of eight sawmills located on the SVOS.

CRAFTSMAN/Dr. Bruce Chubb, MMR, photos by the author

Signal Aspect, Name, and Indication

Signal fluency requires a good understanding of the terms **aspect, name, and indication**:

- **Aspect** is the color of the signal, or color and arm position when using semaphores, or position of the lights when using position light signals. Typical color aspects are red, yellow, green, and in some cases lunar white. Example aspects on multi-head signals are green-over-red; yellow-over-red; red-over-red; red-over-flashing-yellow; red-over-red-over-yellow,

red-over-red-over-lunar white, and other variations.

- **Name** is the official word, or words, used in talking about the specific aspect being displayed by a signal. The most commonly applied names are: Clear; Approach; and Stop; but there are many others: Advance Approach, Approach Diverging, Approach Limited, Approach Medium, Approach Restricting, Approach Slow, Diverging Approach, Diverging Approach Diverging, Diverging Clear, Grade Restricting, Limited Clear, Limited Approach, Medium

Approach, Medium Clear, Slow Approach, Slow Clear, Restricting, as well as Stop and Proceed.

- **Indication** is what the signal tells the trainmen to do. For example, a typically used indication for an approach signal is "Proceed prepared to stop at next signal."

The actual aspects used, with each corresponding name and indication, can vary from railroad to railroad, or even on different parts of the same railroad as might occur on railroad property acquired through a merger or



ABS Single-head Block Signals

If modeling straight ABS signaling in its most simplistic form, e.g., without any interlocking plant involvement, then Figure 1 shows the only set of signal aspects, names, and indications required.

Figure 1 is very fundamental. For those interested, you could eliminate the yellow aspect. The result, however, falls far short of most prototypes, i.e., except for trolley operations where the braking distance to the next signal is not much of an issue. An interesting point noted in Figure 1 is that the most restrictive aspect obtainable with ABS signaling is "Stop and Proceed." This is because ABS signaling is set up to handle double-track applications where traffic on each track is predominantly in one direction of travel. In essence, ABS is set up to maintain the braking distance between trains traveling in the same direction to prevent rear-end collisions.

Establishing the red aspect as a "permissive stop," permits a train, after stopping, to proceed past the red signal at restricted speed, thereby preventing a circuit failure from holding up a train for hours at some remote location. Such action does not sacrifice safety, because the following train is required to operate at

restricted speed, which from our previous definition means that it "permits stopping within one-half the range of vision of equipment or obstruction occupying the track, and also will prepare to stop short of a switch not properly aligned, looking out for broken rail and at no time exceeding 15 mph."

Multiple-head Block Signals

Except for the color position signal and the restricting aspect on the position light, single-head block signals are limited to the three aspects (green, yellow, and red) as listed in Figure 1. This provides protection for two blocks. In simplified terms, an engineer approaching (i.e., in the rear of) a green signal knows that the next two blocks in advance of the signal are clear. By contrast, a yellow signal (an approach) tells the engineer to prepare to stop at the next signal.

Three-aspect signaling requires that block lengths be established so that all trains traveling at maximum authorized track speed are able to stop within one block length. This requirement can be quite restrictive for many prototype applications. Sighting distance — defined as how far ahead an engineer can read a signal before reaching the signal — is not considered when spacing block signals according to braking distance. Why? Because it is

Figure 1 Basic ABS Aspects

Basic aspects, names, and indications for implementing ABS signaling.

ASPECT	NAME	INDICATION
	Clear	Proceed at authorized track speed
	Approach	Proceed prepared to stop at next signal
	Stop and Proceed	Stop and proceed at restricted speed

purchase. In all cases, any signal that does not follow a precisely defined standard for a given railroad is defined as "Signal Not In Correspondence," the details of which are listed in the Employee Timetable. Thus, to follow a specific prototype, you need to learn its practices by studying its Book of Operating Rules and Employee Timetable. However, in the remaining sections of this article, we will cover the more commonly used aspects. Fortunately, for every application you only need to make use of a relatively small subset of all those available.

ASPECT	NAME	INDICATION
	Clear	Proceed
	Approach Medium	Proceed, approaching next signal at medium speed
	Approach Slow	Proceed, approaching next signal at slow speed. Trains exceeding medium speed must at once reduce to that speed.
	Approach	Proceed, preparing to stop at next signal. Trains exceeding medium speed must at once reduce to that speed. Reduction to medium speed must commence before passing signal.
	Stop and Proceed	Stop, then proceed at restricted speed.

Figure 2

Aspects, Names, and Indications for two-headed block signals. Information adapted from the Grand Trunk Operating Rules book, dated 1962.

assumed that due to fog, snow, or other element conditions, the engineer may be unable to see the signal until directly on top of it.

Although longer blocks have the advantage of lowering signaling cost, they result in less traffic-handling capability because trains need to be spaced out at greater intervals. In spite of the fact that we really do not need to worry about stopping distance with our models, but because of

our limited space, we still tend toward having shorter blocks. Using multiple-aspect signaling can help justify our shorter blocks and add a lot of interest to the railroad. Historically, a second signal head is added to block signals as shown in Figure 2, to achieve more than three aspects.

When two heads are used on a block signal, the lower head is sometimes staggered to one side to distinguish it from an inter-

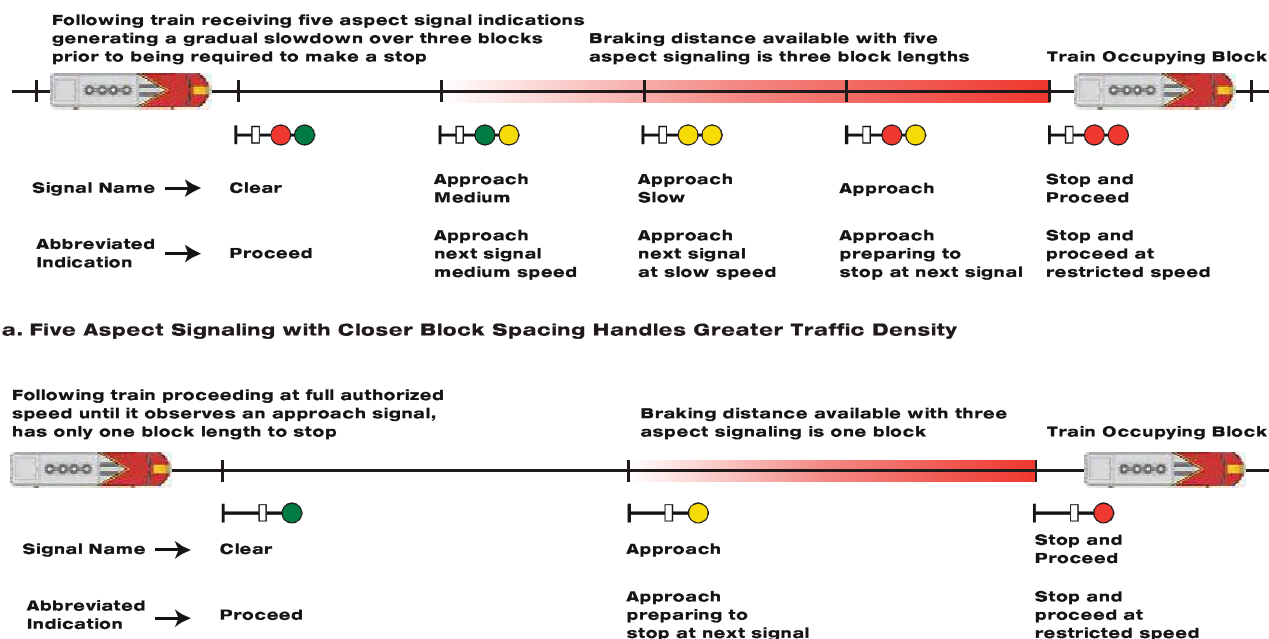
locking signal, in which the multiple heads are always in vertical alignment. Some railroads, such as Chesapeake & Ohio, also have their multiple-head block signals vertically aligned. After all, it is the presence of the number plate that differentiates a block signal from an interlocking signal and not how the heads are aligned.

Figure 2 lists the typical aspects, names, and indications used for two-headed block signals. The five indications result in four-block protection, giving the engineer three block lengths to reach a stop.

Figure 3 compares five-indication to three-indication block signaling. With five-indication signaling, block length can be reduced to one-third braking distance. The shorter blocks allow following trains to run closer together, and this means more traffic-handling capability.

Although the prototypical cost of five-indication signaling is greater, its ability to handle heavy traffic density smoothly can more than justify the added cost in certain instances. To reduce installation cost, many prototype ap-

Figure 3



plications eliminate the Approach Slow indication. This four-indication capability simplifies circuitry with braking distance spread out over two blocks instead of three. This is still better than enforcing the one-block stopping distance required with three-aspect signaling. Although the prototype's cost for implementing added aspects is high, the only added C/MRI cost is approximately \$4 for two added output lines. Software handles everything else.

Implementing Flashing Aspects

Instead of going to the expense of installing multiple-head block signals, economics frequently dictates the use of flashing aspects to achieve added indications. A prominent example with single-head block signals is using a flashing-yellow to indicate an Advance Approach, and a steady yellow for the regular

Approach. This way, the train crew receives an indication to start slowing down one block in advance of receiving the actual approach. This spreads the braking distance over two blocks instead of one.

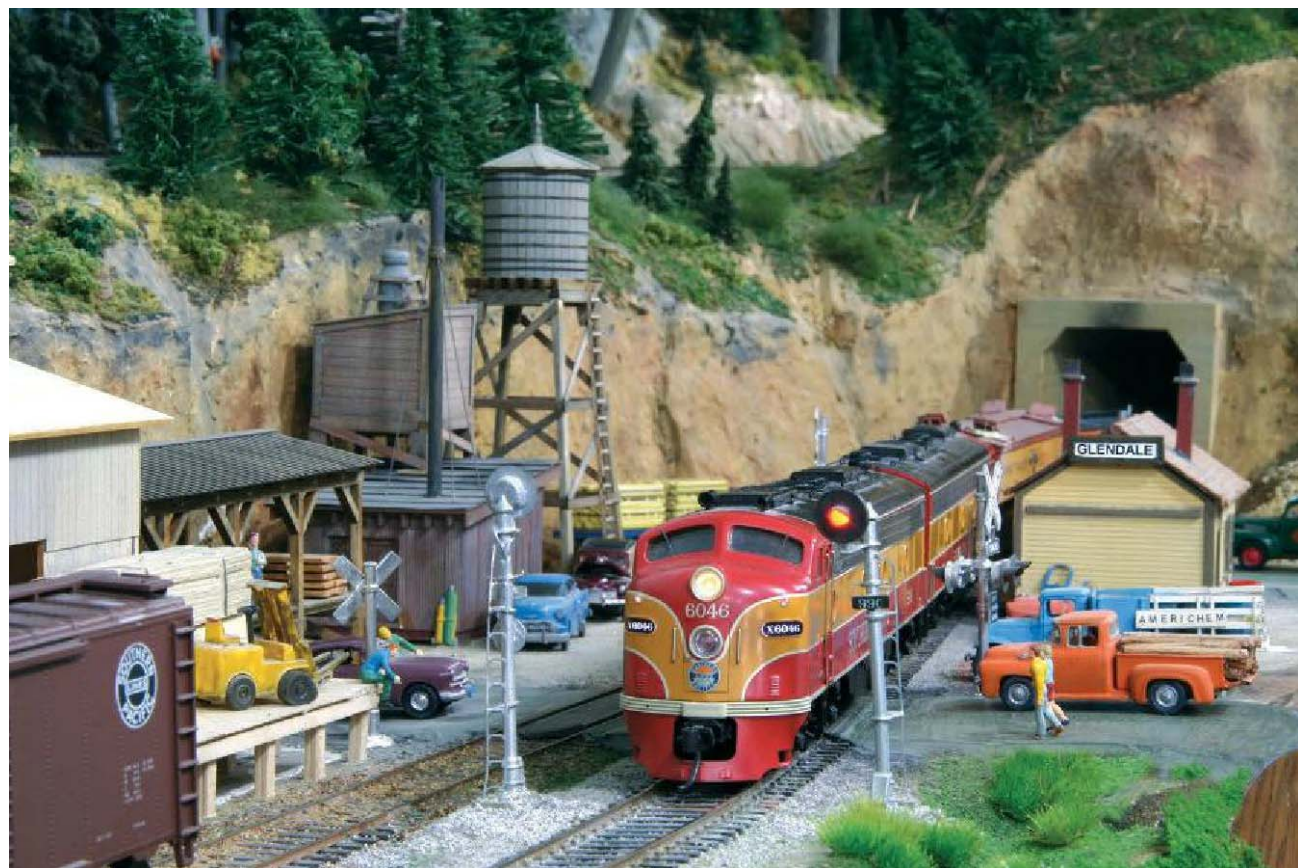
Another common application, this time for two-headed interlocking signals, is to use red-over-flashing-yellow for Diverging Approach and red-over-yellow for Restricting. Without flashing capability, it is common on some roads to add a third head so that a red-over-yellow-over-red is the Diverging Approach aspect and red-over-red-over-yellow is the Restricting aspect. As a further example, some railroads use a lower head displaying lunar white to indicate Restricting while others use a flashing-red in the lower head. The flash rate for wayside signals is defined in the American Railway Engineering and Maintenance-of-Way Association

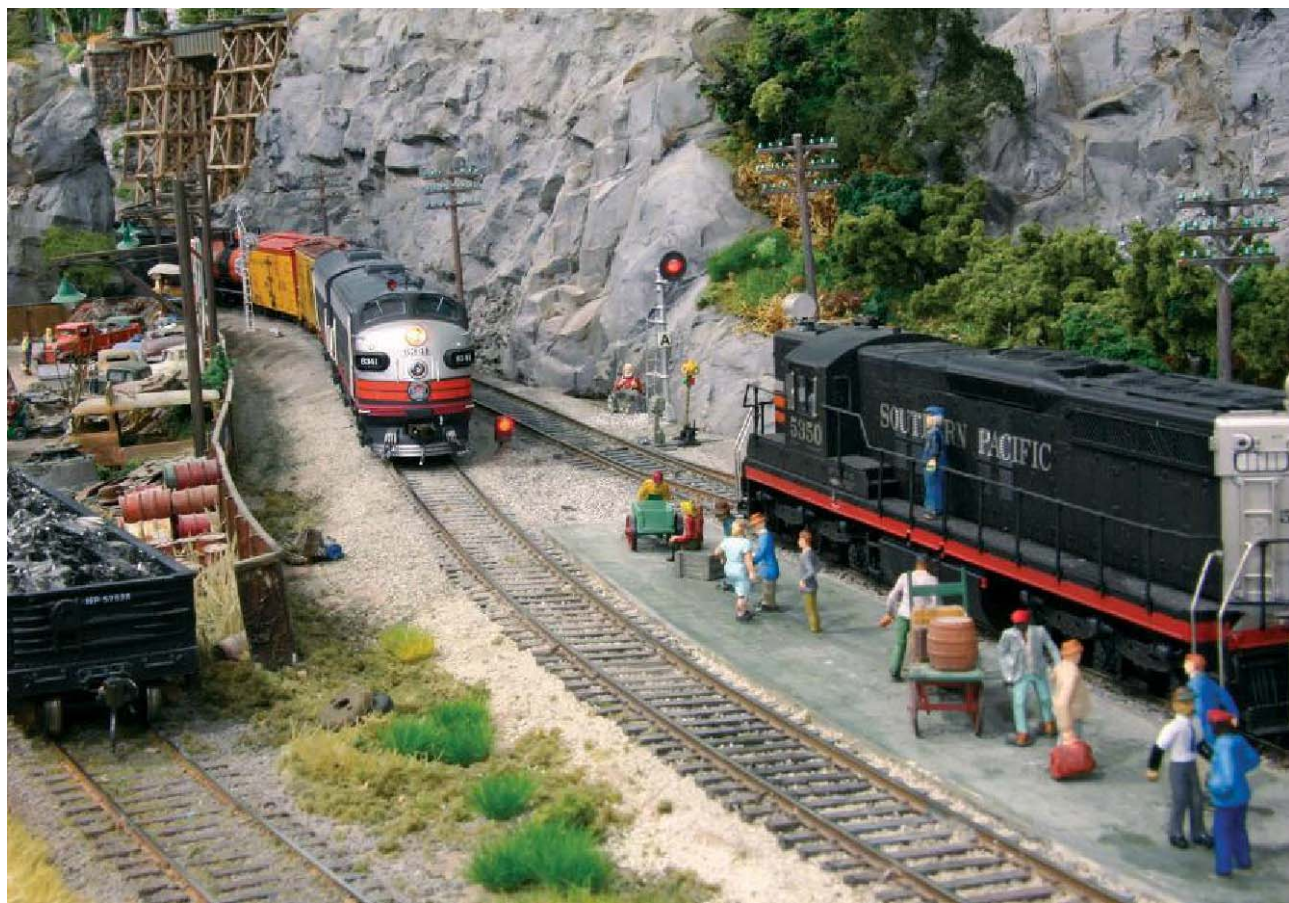
(AREMA) Signals Code of Standard Practice Manual as 50 to 65 flashes per minute.

Employing flashing aspects is a resourceful way to expand your signal system. Also, simulating this prototypical implementation can add significant interest to operations. To top it off, it is easy to add flashing aspects with the C/MRI, since all your signals are under software control. Another very big advantage is there is absolutely zero added cost for the wayside signals — typically the most expensive part of any signal system. Implementing flashing aspects with the C/MRI simply requires alternating between sending the signal command between the two desired aspects. For example, alternating between SE(35) = REDYEL for red-over-yellow and SE(35) = REDDRK for red-over-dark gives the signal at the east end of Block 35 a red-over-flashing-yellow aspect.

Train 403

the Produce Special, with two sets of grade crossing warning flashers and grade bells operating, blasts through a pair of intermediate signals at Glendale, Oregon. Note the number plate directly below the signal head that defines this signal set as permissive signals. At the left is a corner of the Robert Dollar Mill complex at Glendale.





Dispatcher

Don Baxter, having just cleared NP 425 out of Seattle Track 5, is now recording the information on his train sheet. The panel above shows the status of the 20-track lower staging. It's operated as an Entrance-Exit (N-X) interlocking plant, whereby the operator simply presses pushbuttons where train is to enter and exit each section. Up to three simultaneous movements can take place; arrival, departure, and loop-around. All required prototypical interlocking, easily accomplished via C/MRI, sets up the required track switch alignments and signal aspects.



Extra 5350

The dispatcher has Extra 5350 West, headed by three SD9s, holding on the main track at the west end of Grants Pass for Extra 6341 East to pull clear into the siding. This scene illustrates the typical triad of signals found at a large number of OS sections within CTC territory: the two-headed mast signal out by the turnout points and two signals protecting the frog end via dwarf for the siding and a mast signal for the main track. At the left is Quigley's Salvage yard, a frequent shipper on the SVOS, while the track at far upper left is a portion of the SV's Crescent City Branch.



Extra 3718 West

crossing Wall Creek Viaduct in approach to absolute signal protecting the east end of Siskiyou Siding. It's displaying a red-over-yellow aspect — a diverging approach — with indication under route signaling take the siding and be prepared to stop at the next signal, i.e., the end of the siding. Likely the dispatcher is setting up for a meet using the Siskiyou Siding. Additionally, the signaling system would have set an approach diverging — a flashing yellow — at the signal to the rear of the above signal, indicating to the train crew to approach the next signal prepared to take the diverging route.

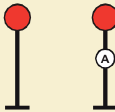
ASPECT	NAME	INDICATION
	Clear	Proceed at authorized track speed
	Approach	Proceed prepared to stop at next signal
	Absolute Stop	Stop and stay stopped
	Stop and Proceed	Stop and proceed at restricted speed

Figure 4
APB
Aspects

Aspects, Names, and Indications for implementing APB signaling.

APB Single Head Block Signals

For signaling to protect against opposing movements on the same track, as a minimum we must implement Absolute Permissive Block (APB) signaling. Figure 4 illustrates the minimal set of aspects, names, and indications required to implement APB signaling.

Comparing Figure 1 to Figure 4 confirms the significance of a signal displaying a number plate, for it is the presence of the number plate that makes the signal permissive rather than absolute. To add emphasis that a signal is absolute, some railroads place a letter plate "A" instead of the number plate.

Because prototype railroads make extensive use of permissive signals, it is nice to do so with our models wherever we can. However, for situations employing Manual Block Control (MBC) or Computer Cab Control (CCC) or Computer Block Control (CBC), where in each case cab continuity is essential across block boundaries prior to clearing a signal, it is important to treat all signals as absolute. There is no such restriction when using Command Control such as DCC.

Interlocking Signals

Even if we think we are modeling strictly ABS or APB signaling, both of which only make use of "block signals," most of our modeling applications involve at least some form of an interlocking plant, whether it is a tower operator-controlled crossover between double track, a junction with a branch line, a crossing with a foreign line, or a terminal area. For all but the simplest railroads crossing at grade, modeling each of these situations requires additional aspects of some form to account for the speed change requirements associated with the traversing through the diverging route(s).

Without getting involved with the differences between "speed signaling" and "route signaling" to be covered next month, Figure 5 introduces a second signaling head to accommodate the diverging route situation.

It should be noted that Figure 5 assumes that "route signaling" is employed. In this case, the upper head relates to the main route, while the lower head relates to the diverging route. For example, red-over-yellow, named Diverging Approach, indicates to the engineer that the movement through the

plant is set up to take the diverging route, at a prescribed speed, and that he or she must be prepared to stop at the next signal. This is in contrast to yellow-over-red, named Approach, which indicates to the engineer to proceed on the main route prepared to stop at the next signal. Additionally, it is important to point out in Figure 5 that, due to its extremely safety sensitive nature, many railroads, in place of the flashing-red, prefer to use a specific and specialized color, i.e., lunar white, to display Restricting. Unlike the other three standard signal colors (red, yellow, and green), lunar white is used to display only one aspect and is seldom found used in conjunction with any color other than red. Lunar white is traditionally used in route-based signaling systems, although in today's modern railroading it is finding its way into many rulebooks for speed-signaled railroads. A lower lunar white marker leading into an interlocking plant is frequently referred to as a "Call On," indicating that "tower crew" is calling on, i.e., authorizing, the engine crew to enter the plant at restricted speed.

When aligned to take the diverging route, using the aspects shown in Figure 5, it is the engineer's responsibility to know the prescribed speed associated with each signal. If the prototype turnout is a No. 16, or in our modeling case a No. 8, the corresponding prescribed speed would be 30 mph, Medium Speed.

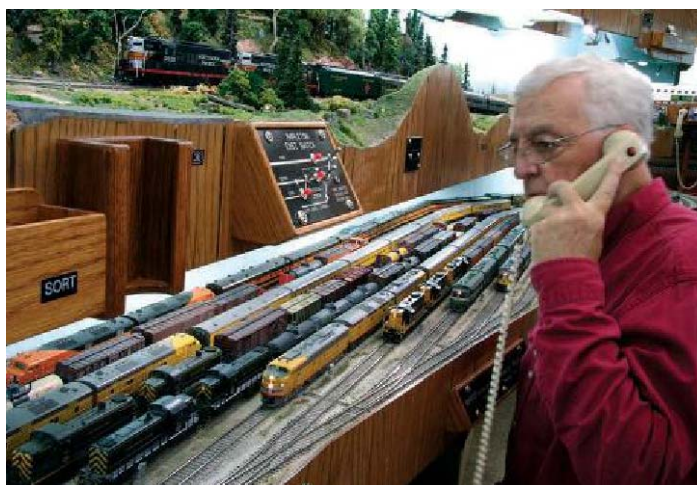
The aspects shown in Figures 1 through 5 may be displayed on any type of signal such as semaphore, color light, color position light, searchlight, and so forth. Additionally, the example marker and number plates shown apply to only red and red-over-red aspects, and their presence or absence has no effect on less restrictive aspects. **RMC**



ASPECT	NAME	INDICATION
	Clear	Proceed at authorized track speed
	Diverging Clear	Proceed on diverging route not exceeding prescribed speed through turnout
	Approach	Proceed prepared to stop at next signal
	Diverging Approach	Proceed on diverging route through turnout at prescribed speed preparing to stop at next signal
	Restricting	Proceed at restricting speed
	Absolute Stop	Stop and stay stopped
	Stop and Proceed	Stop and proceed at restricted speed

Figure 5

Aspects, Names, and Indications for two-headed interlocking signals using route signaling. Adapted from the Grand Trunk Operating Rules book, dated 1962.



Operator

Bruce Van Huis, carrying out the role of Seattle Operator, calls the Terminal Dispatcher to clear Train 408, the NP Seattle–Portland Passenger Pull Train, out of Track 3 of 20 staging tracks representing Seattle, Spokane, or Pocatello, depending upon the train being operated. After giving the dispatcher the train's lineup, Bruce reverts to being the crew for 408 and waits for the dwarf signal on the right, i.e., engineer side of the train in front of his train, to clear. Note the train on the deck above is the Coos Bay Passenger on its journey from Eugene to Coos Bay.



C/MRI

Computer/Model Railroad Interface

Operations Bliss

The 991 (a hot intermodal train) pulls into Emporia, Kansas, as a light power move gets an approach signal at the west end of the yards. The entry crossovers to the main lines are protected by a double-headed "pot" signal that require dispatcher permission to enter the main line. All these signals are easily automated by using C/MRI. The interface can be built as kits or purchased fully assembled and tested. Nothing else you can build will transform your layout's personality, adding prototypical realism and operations.

The C/MRI acronym stands for Computer/Model Railroad Interface, a system invented by Dr. Bruce Chubb for interfacing a computer with a model railroad. Its original introduction was a 16-part series in *Model Railroader* magazine beginning with the February 1985 issue. The C/MRI system has since undergone numerous updates, making it more applicable today than the day it was invent-

ed. Bruce's system is robust, economical, and completely tested. There are thousands of systems around the world — three of them operate in my hometown of Kansas City. Bruce has published books on his system, so it is well documented. The components are available assembled and tested and in kit form (www.sliqelectronics.com) or simply as PC boards (www.jlcenterprises.net) that you can add your components to following the instructions provided in Bruce's documentation. C/MRI-compatible components are also available from www.modelrailroadcontrols.com. What else could you ask for?

The basic concept is to distribute input/output nodes around your layout, whereby each of your railroad devices that you want interfaced, such as wayside signals, occupancy detectors, switch motors, panel switches, pushbuttons, turnout position, and display LEDs simply connect to input or output pins on the nearest node. Up to 128 nodes are possible, and the only connection between nodes is a single four-wire cable that daisy-chains from node to node.

We first purchased the C/MRI system from Bruce in 2002 for our Santa Fe Emporia Subdivision (MR, June 2004; RMC, June 2005), where it operated flawlessly for more than 12 years. I consider this purchase to be one of the best I have ever made regarding my model railroad. We are currently expanding our C/MRI and adapting it to our new railroad, the Santa Fe St. Louis Division — a 3,400-square-foot empire modeling a theoretical Santa Fe route between Kansas City, St. Louis, and Chicago (www.stlouisdivision.com).

We are already deep into assembling all the newly needed C/MRI components and beginning their installation. The project is fun. See the latest photos available at www.stlouisdivision.com/cmri. We will be using the C/MRI to control multiple grade crossings, (wayside) signals, interfacing to a CTC machine, and multiple yard panels and interlockings, staging, and even reverse loops. I love the programmable flash rates for the (wayside) signals.

If you are serious about adding prototypical signaling to your railroad, I heartily recommend using the C/MRI system.

Stephen M. Priest, MMR

Yuma, Arizona, Gas Station

Pre-Fab Metal Gas Station Building

CRAFTSMAN/Nicholas S. Muff, MD, photographs by author

I had the privilege of driving over Route 66 in the West many times during the 1950s. Among other things, I developed an attachment for vintage gas stations. While on assignment in Yuma, Arizona, I found this beauty sitting in a scrap yard. Obviously, someone else thought it had value. It had not been scrapped but placed

on poured concrete slabs. Even the gravity feed pumps had been preserved.

This service station is assembled from prefab steel sheets and shapes. The windows are steel sash. All you have to do is add graphics for your favorite petroleum company!

Modeling Notes

This structure could be readily modeled using styrene sheet and structural shapes.

The roof would require "corrugated" styrene sheet. Its small size would make it easy to fit on a model railroad layout. **RMC**

Station Front

Here is the front, right corner of the station.

Note the fluorescent light under the eave. The curved steel braces could be easily shaped using styrene angle. The corner posts are "I" beams.



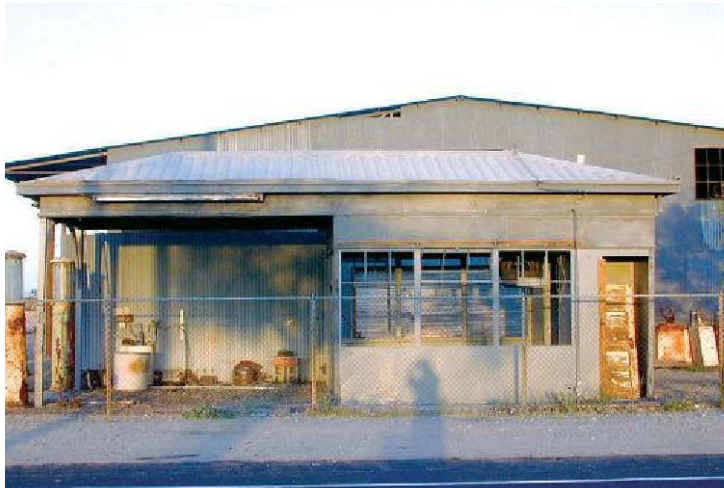


Oil Storage

In the 1950s, oil was not always poured from a can into your car. Oil was often dispensed from the above containers into a glass bottle with a metal spout and then poured in to the engine crankcase filler.

Rear Elevation

This image shows the two bathroom vent windows high up on the structure and the large window panel. Notice the structure has no rear exit. The cutout below the window was undoubtedly for an air conditioner.

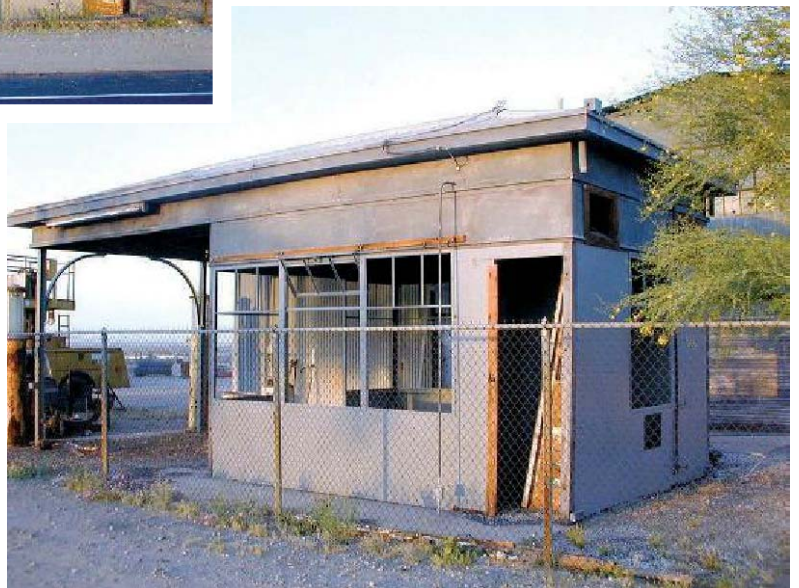


Side Elevation

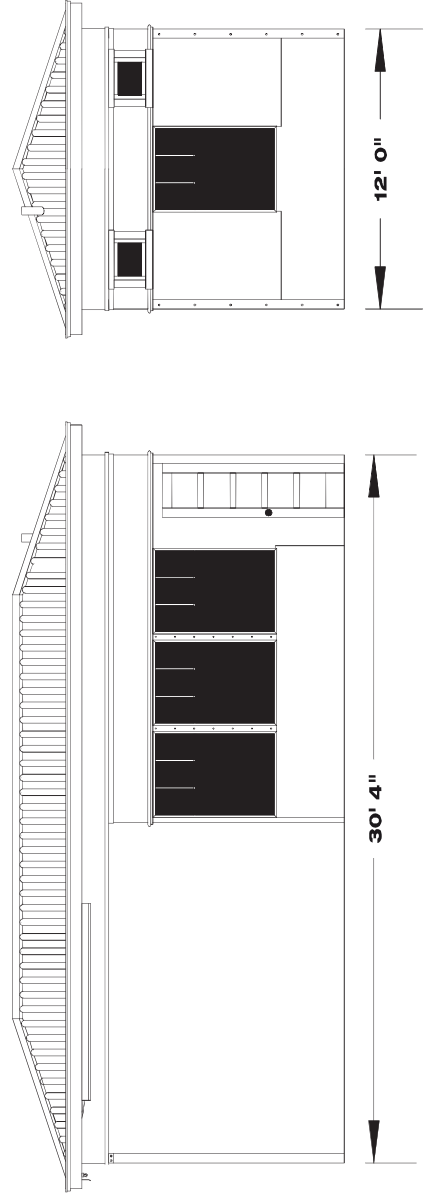
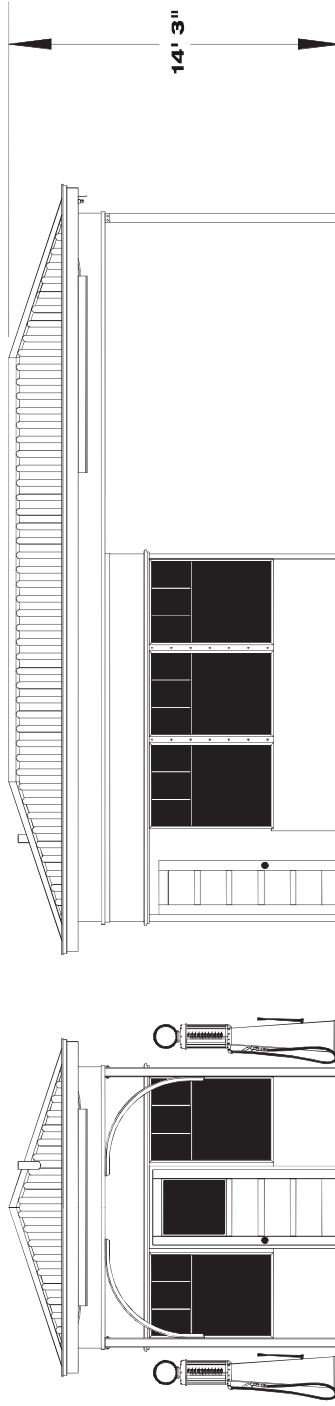
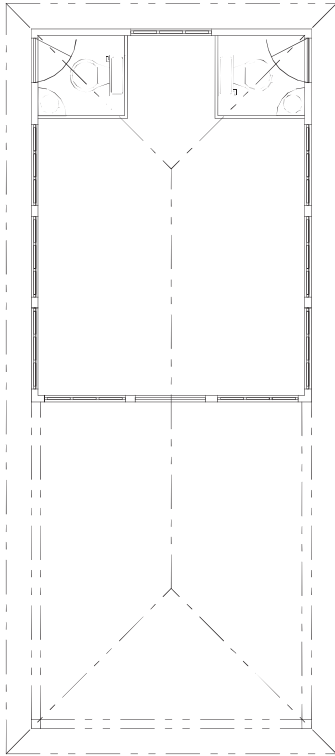
Note the "corrugated roof" and the fluorescent light under the eve.

Back Corner

The open door is one of two that accessed the rest rooms. These entryways were on the sides of the structure toward the back.



Gas Station Yuma, Arizona 2-16-06



All drawings created expressly for
Railroad Model Craftsman by
Nicholas S. Muff M.D.
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Scale 3.5mm = 1'



Grain Elevator Transfer Table

CRAFTSMAN/Joseph Kreiss, photographs by author

Design

The table rides on four rails supported by eight wheels. Each wheel has a solid bearing riding on outriggers from the track support framework.

While railfanning recently in Wichita, Kansas, I stumbled upon a vintage, electric-powered transfer table tucked away in an industrial area of the city. This long-

out-of-service relic was once used to move grain cars from track to track at the large grain elevator's four-track railyard. My discovery of this old transfer table opened my eyes to an exciting new way this unique piece of equipment could be used on a model railroad.

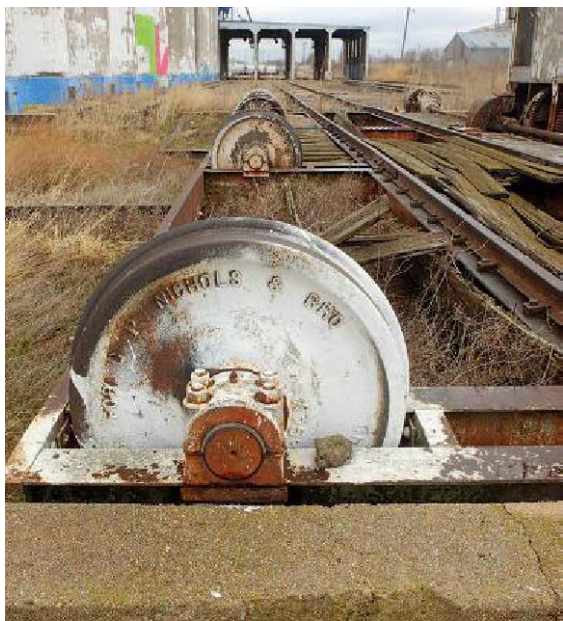
When model railroaders think "transfer table," we typically think of a locomotive or rail car repair shop at a large yard or terminal. A transfer table consists of a single length of track mounted on a platform or bridge that can be moved from side to side, perpendicular to another track or group of tracks, rather than in a 360-degree circular movement like the turntable. On the transfer table, a locomotive or rail car is moved from one track to the transfer table, and then the table is moved and aligned with another perpendicular section of track, so the rail car or engine can "transfer" onto that track. Although transfer

tables can still be found at some major American railroad facilities, it wasn't as common as the quintessential turntable located at a roundhouse or at the end of the line on smaller, steam-era short lines to turn the engines for the return trip.

Over the years, model manufacturers have offered transfer tables in several scales, such as the HO-scale Walthers Cornerstone series 100-foot motorized Transfer Table model. Lionel once offered a transfer table, so early hobbyists could move their three-rail 027 size rolling stock or locomotives from one parallel track to another.

The Prototype

The transfer table I photographed is quite hidden from view, and I found it by pure chance. It sits alongside the massive Beachner Grain Terminal elevator in Wichita. By the looks of things, the transfer table has not



been used for many, many years. The elevator complex itself seems to be run down, vacant, and looks abandoned as well. Because the transfer table is tucked away deep in the industrial area and is hidden in the shadows of the silos in a Google Earth view, it has remained in good condition, falling victim only to Mother Nature's wrath, untouched by vandals and taggers.

Unfortunately, I did not have a long tape measure with me that day; I paced off the distances to estimate approximate dimensions. I used the 4-foot, 8½-inch gauge of the track on the transfer table as another way of "guesstimating" size. The transfer table measures about 45 feet in length. That would lead me to think this unit was used during the 1940s through possibly the mid-1970s time period, when grain was mainly hauled in 40-foot general service boxcars rather than in covered hoppers.

The table rolled over four parallel rails perpendicular to a four-track stub-end yard next to the elevator's silos. The table's pit is contained within an eight-inch-thick concrete border approximately 70-feet long by 50-feet across. The rear (or west end) of the pit is bumped out in the middle to allow clearance for the operator's shack when the transfer table moved to access the westernmost yard track.

The transfer table frame is constructed from steel I-beams, either bolted or riveted together. Rails are secured in gauge on top of the table's two center I-beams with steel tabs bolted to the beams. Wooden plank walkways were fitted between the rails and on the elevator side of the table, while walkways around the operator's shack and motor box were made from sections of open grate metal material.

It looked like cars were rolled onto or off the transfer table using a winch, cable, pulleys, and hooks. One of the old hooks and

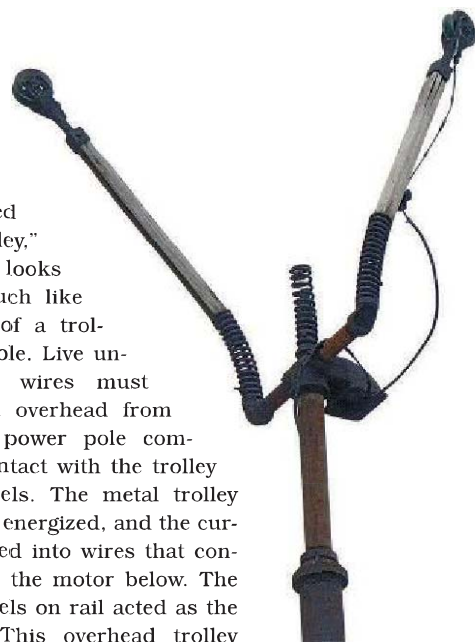
its attached cable is still onsite next to the transfer table. There is also a flat double pulley set and attachment points mounted to the transfer table deck.

Eight flanged freight car wheels allowed the transfer table to roll back and forth on the four rails within the pit. The four front wheels (east side) are each independent and bolted onto the framework with sets of U-shaped wheel bearing caps. The drive wheels (closest to the operator's shack) are all connected with a long driveshaft/axle running the length of the transfer table.

A large electric motor was employed to power the transfer table. The motor received its juice from overhead power lines. One metal power pole is still located next to the silo's north side. Another metal power pole is bolted to the transfer table's framework. This power pole is topped with very unusual-looking spring arms. Long, square pieces of wood have been stuck into the ends of the springs to act as insulators. At the end of each wood insulator is a grooved metal

wheel assembly called a "trolley," and it looks to be much like the end of a trolley car pole. Live uninsulated wires must have run overhead from the silo power pole coming in contact with the trolley pole wheels. The metal trolley would be energized, and the current routed into wires that connected to the motor below. The steel wheels on rail acted as the ground. This overhead trolley setup allowed the transfer table to move and maintain constant electrical contact with the energized overhead wires as it moved back and forth.

The heavy-duty motor is still there, mounted inside a steel-framed box covered with plywood. The motor output shaft is fitted with a small-diameter toothed gear, which spun a large-



Details

The electrically powered table used trolley-like pickups to provide the electricity to move the table. One end had permanently affixed wheel-stops attached, so cars could only enter from one end of the table.





Compact

The transfer table was built to service the four loading and unloading sheds that are part of the elevator complex. The lack of adequate lead space for turnouts made the transfer table idea feasible.

er-toothed gear and flywheel attached to another axle. The “gearbox,” so to speak, is located directly under the operator’s shack. Power was transferred from the gearbox assembly to a single-toothed gear mounted on the inboard wheel/axle assembly. The large gear is protected with a curved metal cover and has a step on top to help climb into the operator’s shack.

The operator’s shack is built from angle iron framework and plywood sides. The structure is approximately four feet wide by three feet deep and about 6½-feet tall at the highest point of the rounded roof. Three window openings and a doorway allowed the operator access to the cab and allowed him to see the yard tracks and activity on and

around the transfer table. The solid panel door had been attached to the opening with common door hinges. There wasn’t any evidence of broken glass on the ground or around the cab, so it’s hard to say if the openings once contained paned windows. Plywood had been fitted into the metal window frame openings. During the winter months, it had to be a very cold duty for the table’s operator. If they used removable plywood panels within the window openings to block the cold and snow, visibility from the cab would have been pretty difficult.

Within the operator’s cab, two long metal levers protrude from the wooden floor. One lever is probably a hand brake, and the other

is attached to what appears to be a transmission-like housing on the geared drive axle. The operator pushed the lever one way or the other to change directions of the transfer table, with the center position likely neutral. A controller stand is the only other item in the cab. This device is similar to the throttle found in trolley or street cars. The contacts were electrically charged and controlled the speed of the transfer table. The curved cover piece that enclosed the controller drum is missing.

I did not notice any headlights, work lights, or general overhead lighting on or around the transfer table or silos, which leads me to believe car movements at the transfer table were done during daylight hours only.

The Model and Operations

A commercially available transfer table, such as one offered by Walthers, although twice the length as the Wichita transfer table, could be easily installed into the layout benchwork. However, I think scratchbuilding a transfer table like the one I found in Wichita would be a fun and rewarding project yielding a unique scale model.

For modern-era layouts, a vintage-looking non-operating transfer table weathered with peeling paint, rust, and tall weeds and trees growing around it could be added next to a current-day “working” grain elevator facility as a point of interest. A real eye-stopping scene for a steam-to-diesel transition era layout would be an operational transfer table, where switch crews working at the elevator move loads and empties via the table as well as with their locomotive.

Building the basic structure components of the transfer table seems straightforward. The framework could be made using commercially available styrene I-beams, H-beams, and angle. The superstructure could be detailed using 3-D raised rivet decals available from several manufacturers. Stained and weathered strip wood would represent the planking, and commercially available scale see-through grate material would work for the other sections of the walkway. The operator’s shack could be fashioned from sheet styrene and angle pieces, and the spartan operator controls inside the cab could be scratchbuilt or purchased using steam locomotive or traction cab detail parts.

Standard-size freight car wheels could be used for the rolling chassis, fitted to roll on new axles and mounted on the styrene framework. The complex-looking gearbox could be made with various detail parts and ex-



tra gear sets from the scrap box. If you built an operational model and wanted the gears to turn as the table was moved, various gear sets available from companies such as North West Short Line or Micro-Mark could do the job.

To animate the transfer table, motors and drive assemblies such as the ones offered by Walthers for its double track

swing bridge (933-3088) and 90-foot turntable kit (933-3171) and walking beam oil pumps in HO (933-3170) or N scale (933-3248) might work. Walthers claims these kits can easily be adapted to other models, and with a 360:1 gearing of the motor, it would ensure smooth, slow speeds for the transfer table operations. **RMC**

More Details

The motor and drive was concealed in a plywood structure. The gearing and drive rested directly beneath the control house.



Great Northern's early 50-foot boxcars

GN 38984

One of the railroad-built cars is shown here. The car drawn this month would have greatly resembled this one when built. Except for some minor dimensional differences and some details, the cars were closely aligned. Notice the car lacked end numbers. — GN photo, GNR Historical Society collection

Background

Great Northern's initial foray into 50-foot boxcars began with a program running from 1924 through 1929, resulting in 3,100 cars being produced. Most of these were built in company shops, but one order was placed with outside builder General American Transportation Company (GATC). It's those cars that are the focus of this month's article and drawings.

The GATC Cars

In mid-1925 GATC assembled 900 cars for the Great Northern, their 39200–40099 series. Assigned to automobile service, these 50-foot, 6-inch cars came with 10-foot doorway openings. These were filled with 6' plus 4' Camel No. 50 wooden doors. They were assembled with Standard Railway Equipment Com-

CRAFTSMAN/James Kinkaid

pany's Murphy X-L-A roofs and corrugated ends. Although other similar cars of the period came with arch bar trucks, these were fitted with cast steel trucks from the beginning. As was normal for the era, they also came with KC brakes and vertical shaft hand brakes.

In May 1935, cars began to be rebuilt with six-foot wooden doors and renumbered as 29000–29896 (there being four cars destroyed in the interim). Renumbering continued through at least mid-1942. About 1940 these cars began receiving Camel steel doors. In addition, AB brakes were retrofitted. The rebuilding may have occurred at the St. Cloud, Minnesota, shops since that is where the AB brake drawing originated. Great Northern's 29768 received unusual treatment: it was heavily modi-

fied with twin doors of 10-feet, 6¼-inch and 11-feet, 0-inches for lumber service on September 26, 1955. It was then renumbered to GN 29000, that number being vacant at the time.

By the early 1950s, these cars were becoming worn with damaged siding, and the narrow door openings were a handicap when using modern loading equipment. More than half of the orders for 50-foot boxcars on the SP&S and the GN Spokane and Cascade Divisions were asking for cars with eight-foot-wide doors.

In 1952, the railroad decided to rebuild 450 of the 29000-series cars with new steel sides, wider Camel steel doors, Standard Railway (Stanray) diagonal panel roofs, and metal running boards but kept the all-steel underframes. Most cars also



retained their Murphy ends. In 1953 and 1954, the cars began to be rebuilt with either eight-foot or 15-foot doorway openings. One hundred cars were also chosen to receive Pullman-Standard roofs and ends. All these rebuilt cars were further renumbered,

and we'll have more information on those cars in future articles.

A number of cars in the 29000 series remained unchanged beyond 1954. After allocating cars to be rebuilt with steel sides, some 385 remained unchanged as of January 1954. By January

1963, only GN 29000 remained listed in the equipment register. Surprisingly, it remained in service until retired in November 1970. Burlington Northern delisted it effective April 1971!

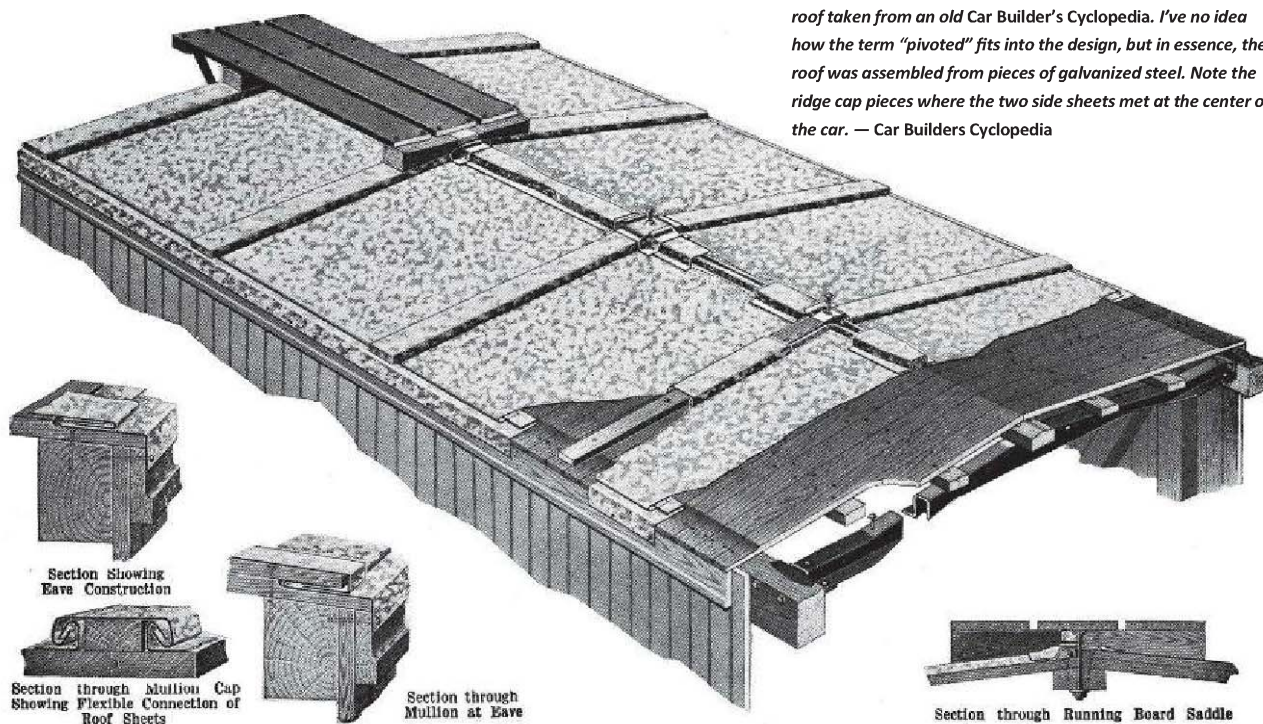
Wood Sided

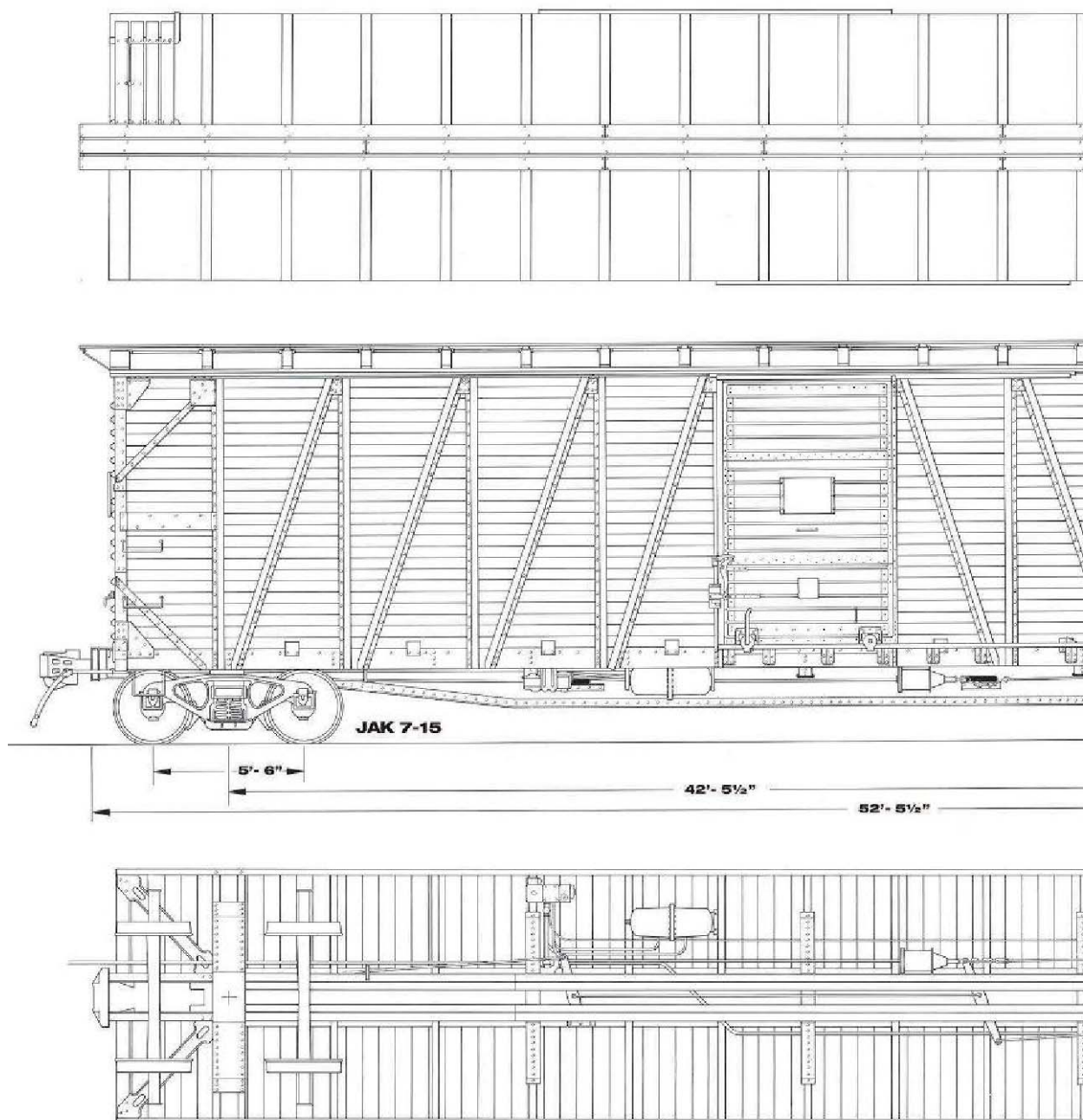
A view of the cars as rebuilt with wood sides and steel framing. Notice the steel door and ends. —

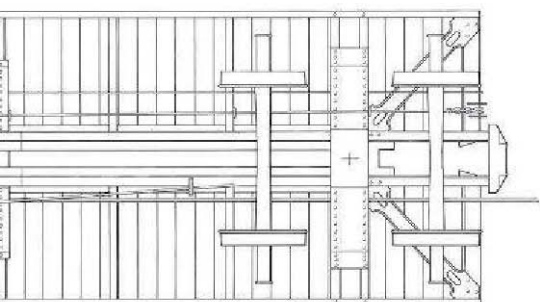
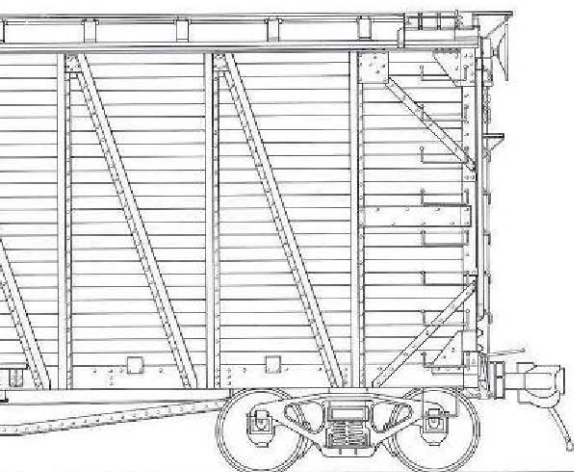
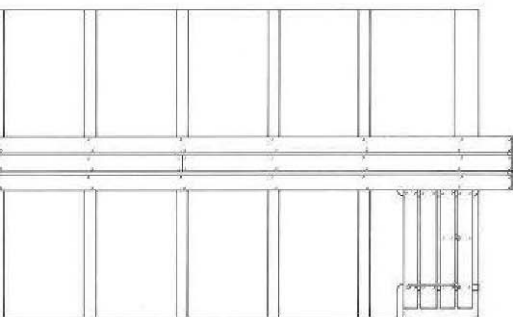
Willard Peterson, Staffan Ehnborn collection

Murphy Roof Design

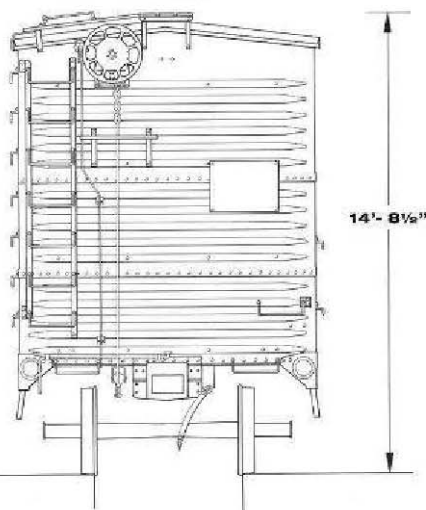
A diagram of the Murphy X-L-A "Improved Pivoted Flexible" roof taken from an old Car Builder's Cyclopedia. I've no idea how the term "pivoted" fits into the design, but in essence, the roof was assembled from pieces of galvanized steel. Note the ridge cap pieces where the two side sheets met at the center of the car. — Car Builders Cyclopedia







B - End



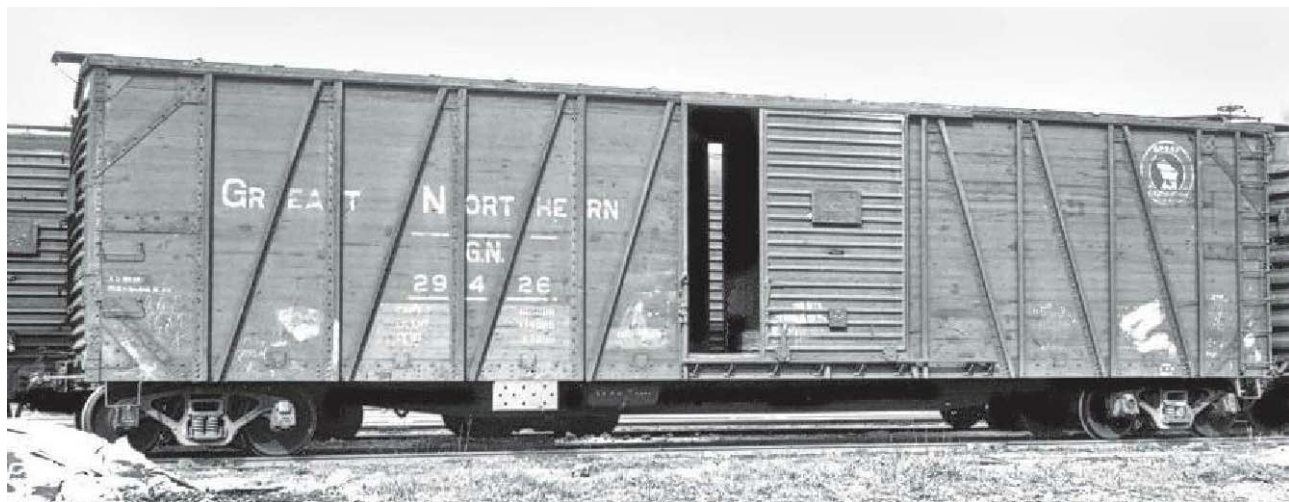
Cross-Tie

Cross-Bearer



Bolster

*All drawings created expressly for
Railroad Model Craftsman by
James Kinkaid
copies may be made for
noncommercial use only.
S Scale*



GN 29426

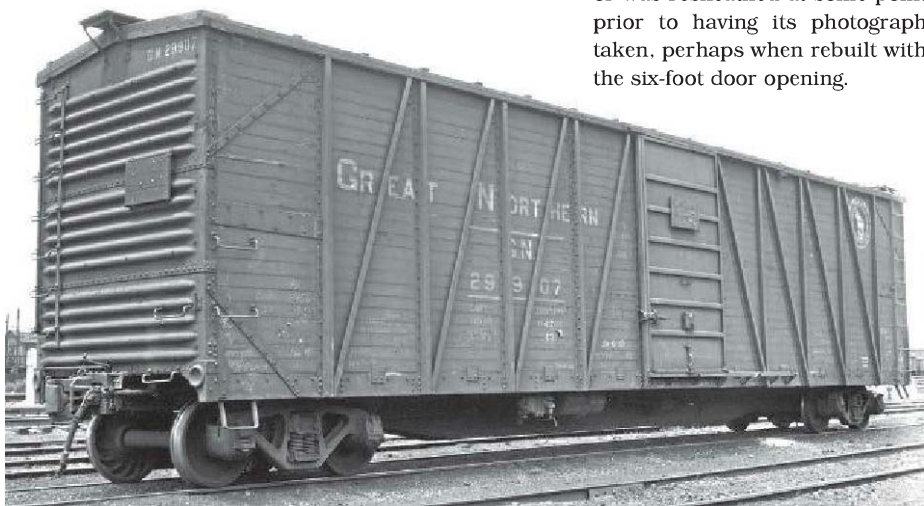
Showing its age, the 29426 rested between assignments with both doors ajar. Unlike some of its siblings, this car has side ladders in lieu of grab irons. — Stan Styles, Staffan Ehnborn collection

AB Brake System

The AB brake system was a replacement for the car's original KC style. It offered less maintenance and better braking. — Staffan Ehnborn collection

GN 29907

sat by itself at Wenatchee, Washington, in August 1951. Notice how the end was fabricated from three major steel stampings riveted together. — Bob Schell



The Drawings

This month's drawings are based on the 29000–29896 series with the six-foot Camel steel door. As noted, the cars' original underframes were kept. The underframe used nine-inch channels for the lower side sills and had 26-inch deep fishbelly center sills. Cross bearers were provided with six-inch bottom cover plates. The design passes the cross bearer bottom plates through the center sill webs in lieu of dropping them down to meet the center sill's bottom stiffener angles. Thus, little of the cross bearers are visible from trackside. Note that there are no stringers in these cars; they were

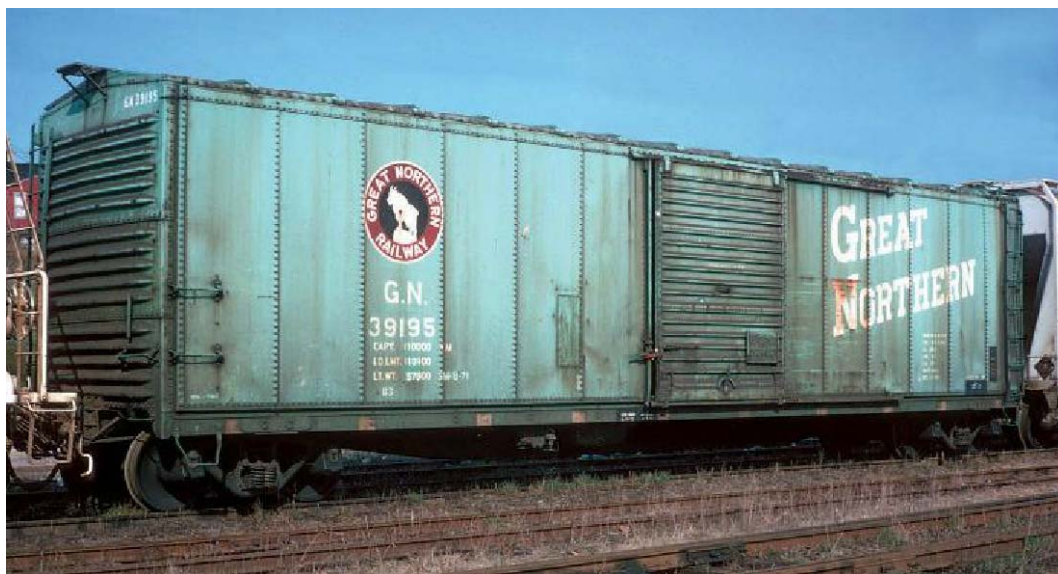
applied when the superstructures were replaced in the early 1950s.

The GN drawing shows that the cars were supposed to have received side ladders. However, as may be seen in several photos, not all cars got this modification. Perhaps there was a shortage of parts and the cars received them in the course of normal shopping. I've also provided a separate drawing showing the alternate side ladder installation. In addition, the blueprint shows the cars as having 24 side boards, as do several of the cars pictured. However, GN 29426 appeared to have been sheathed with 25 per side. If true, it is unknown if the car came this way from General American (which seems unlikely) or was resheathed at some point prior to having its photograph taken, perhaps when rebuilt with the six-foot door opening.



GN 29339

sat at Fayetteville, North Carolina, on December 30, 1951 — Bob's Photo, Staffan Ehnborn collection



Rebuilt again with Steel

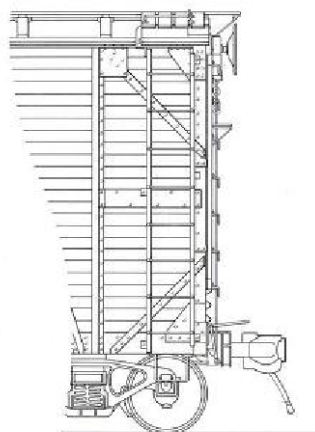
One of the rebuilt cars mentioned in the article sits at Reading, Pennsylvania, on April 2, 1974. In future issues, we'll provide drawings and modeling information on this car, along with several others. — Craig Bossler

The original cars came with vertical brake shafts and top-mounted hand brakes. When rebuilt (probably in conjunction with the application of AB brakes), they received power hand brakes. The model of hand brake is not indicated on the diagram sheets, nor in any blueprints that I had, but photos show an Ajax, so the cars are drawn with the Ajax model 701 used from 1930 on into the 1990s.

When we return to these cars, we'll begin looking at the rebuilds. We'll also provide mod-

eling information on those more modern cars. I know of no models available for these GATC-built cars, but Westerfield did produce an HO model of the original 10-foot door cars supplied by the Superior shops.

Many thanks go to Staffan Ehnborn, Ken Middleton, and Jim Ruffing for their assistance. **RMC**



Alternate Side Ladder Detail

Although the cars were supposed to have full side ladder arrangements many were built with this alternate ladder design or with grab irons in place of a ladder.



LaserKnife-Laser Cutter

Laser cutting is easier than you might think!

CRAFTSMAN/George Riley, photographs by author

Homemade

The LaserKnife 2525 and a computer equipped with CorelDRAW makes it easy to design and precisely cut parts for modeling projects. The tool and its programming is intuitive to operate by even the most inexperienced user.

For the vast majority of modelers, the enjoyable pastime of model making is a blend of design and construction skills with a mastery of tools. Each new tool gives us the ability, once its use is mastered, to take our modeling to a higher level of compe-

tence and perfection. Our first hobby knife and metal straight edge opened the door to what would become a lifelong pursuit for most of us. The acquisition of a pin vise allowed our range of subjects to vastly expand in scope. The addition of an airbrush gave us the ability to apply professional finishes to our models. With the introduction of Micro-Mark's LaserKnife 2525 laser-cutting machine, the average model railroader can now bring his or her modeling techniques into the 21st Century.

This machine lets the home model maker attain the high precision inherent with laser cutting, which, in the last decade, revolutionized the model railroad kit market. Using this tool, the modeler can quickly

make precise parts to upgrade models, or even design and cut complete "scratchbuilt" projects. Items that can be created using this machine are limited by the operator's imagination and skill at computer-assisted drawing. Once a drawing file is generated, the hobbyist can cut just one part, 100 parts, or several thousand, which makes this tool ideal for creating multiple models of the same design. With only a little practice, a part can be drawn in CorelDRAW (or other user-friendly drawing programs) and cut out with the laser in less time and more accurately than if using a straight edge and hobby knife. In addition, the LaserKnife will precisely cut common modeling materials — paper and cardstock, thin plywood and sheet wood, plastic sheet, and vinyl. The machine will not cut metal.

Each LaserKnife 2525 is delivered fully tested and includes



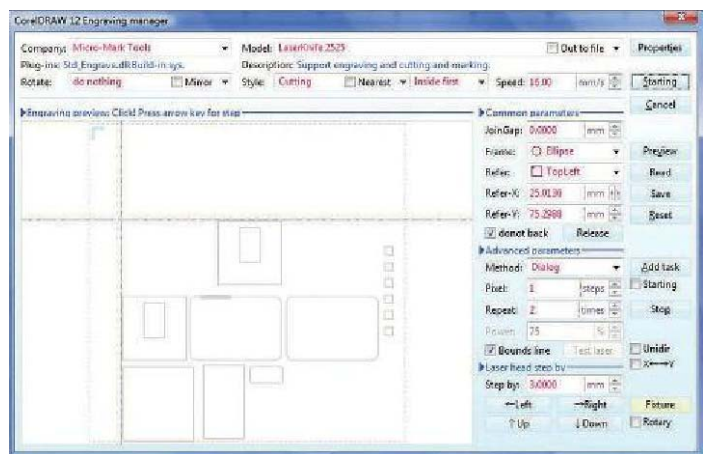
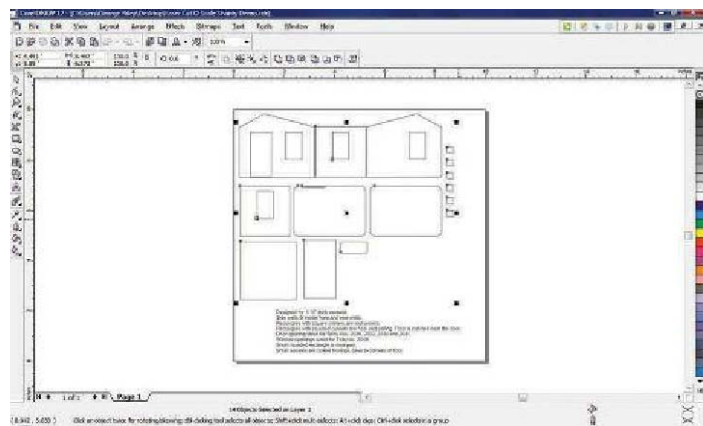
a comprehensive instruction manual, which makes for trouble-free and easy operation of the unit, even for someone totally unfamiliar with the technologies involved. In addition, Micro-Mark readily provides technical support for any additional issues that may confront the user but are not specifically covered in the manual.

The LaserKnife 2525 is a full-size laser-cutting/engraving machine with a cabinet measuring 19-inches deep by 32-inches wide. The active cutting area measures a nominal 10-inches square and, with careful design, will accommodate parts and projects ranging from N and Z scales up to and including large scale. If you set the machine to make multiple passes, the 40-watt laser unit will cut wood up to 3/16-inches thick.

While this unit is designed

for the home hobbyist, it should be placed on a caster-equipped worktable since it's a bit bulky for putting away after every use. The LaserKnife is best suited to a dedicated workspace and has a couple of ancillary support items that need to be located near the main cabinet. The LaserKnife 2525 includes a transformer that allows the machine, which functions on 220vAC, to operate on standard 110 volt, 60 Hz house current. A ground fault interrupter circuit outlet is recommended for this unit since a water-cooling system is used while in operation.

To operate the tool, a computer with a Windows 2000 or later operating system connected to the Internet and running CorelDRAW version 11 or later needs to be connected to the machine through the provided USB cable. The LaserKnife re-



quires the full version of CorelDRAW and will not operate with student versions. Versions of CorelDRAW can be downloaded online, or program discs of no-longer-supported versions (i.e., CorelDRAW 11 or CorelDRAW 12) can be affordably purchased. As long as the computer will support the program, an older computer can be put in service. Most Corel versions require only 2 GB of RAM and 1 GB of hard drive disc space for the program. CorelDRAW is very intuitive and features a number of resources and tutorials. So, learning the program is relatively easy. To get the user started, Micro-Mark includes a group of demonstrator files and a supply of workpiece materials, which will have the machine up and cutting in a very short time.

In addition to CorelDRAW, a plug-in for the program, called CorelLASER, will need to be downloaded from the Micro-Mark website. CorelLASER adds functionality to CorelDRAW so that the computer will interface and operate the LaserKnife. A dongle (which looks like a memory stick and prevents unauthorized use of the program) is provided. It's plugged into a USB port on the computer and permits communication between the computer and the LaserKnife.

Also included with the tool is an exhaust fan, which removes smoke generated during the cutting process. A dryer vent needs

Powerful Box

The LaserKnife includes all of the items needed for the first time user with the exception of a computer and a copy of CorelDRAW.

Middle –

Once a drawing is completed or one is selected from the downloadable projects, select the areas to be cut by clicking on those parts of the drawing. The selected items will be designated by black squares around those parts.

Bottom–

By clicking on the cutting icon on the right top tool bar and approving the pop up screen, the Engraving Manager screen will appear on the computer monitor. The drawing can be adjusted to fit the materials to be cut on the cutting bed, and by pressing the "starting" button the laser is activated.

Cut Out

The cut parts for the walls, floor, and roof are laid out following cutting. Basswood battens have been glued in place to reinforce the various parts and to increase the gluing surfaces to assure more durable joints.



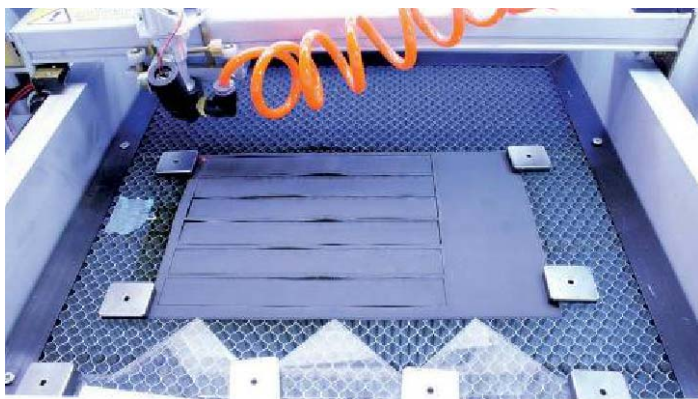
Cutting

Additional parts such as peel-and-stick rolled roofing and trim can be easily created by cutting pre-painted label paper.

to be installed in the work area to vent the smoke to the outside. A section of vent tubing is also provided; however, the operator may need to add additional sections to reach an exterior wall and vent. These are available from any home improvement center or hardware store.

The LaserKnife uses a water-cooling system to keep the laser "tube" from overheating. Keeping the unit cool is very important; failing to do so will dramatically reduce the life of the laser tube. The owner needs to provide a five-gallon bucket containing three gallons of distilled water. A submersible pump is included and installed in the filled bucket to circulate cooling water through the unit. Prior to every use of the machine, it's a good idea to check that the water is flowing through the machine.

One additional ancillary item included for proper operation is a small air pump, which blows air through the cutting head to remove soot and dust from the lens and workpiece. Each of these items is plugged into the unit's electrical sockets located on the rear panel of the machine. They automatically operate when the machine is powered up. All are designed to operate on 220

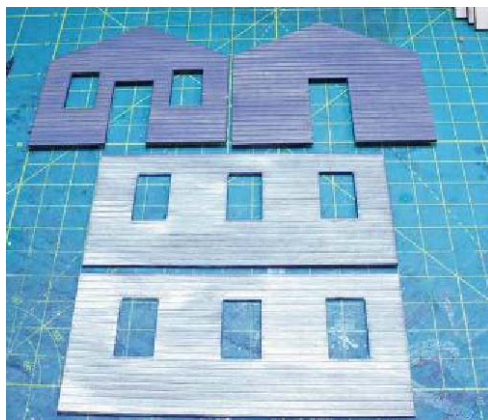


volts 60 Hz AC, so do not bypass machine) and, once satisfied, the LaserKnife's electrical sockets and plug these into regular 110-volt wall current.

Once the unit has been set up, and all systems are operating, a demonstration file can be downloaded from the Micro-Mark website onto the control computer. Micro-Mark recommends using one of the shanty files for a trial run initially to cut out sample parts from a piece of chipboard (included with the

Walls

Staining and sealing all of the parts prior to assembly really speeds up the construction process and yields a neater model.



basswood.

The LaserKnife 2525 is equipped with an LED “pointer” that projects a small red dot on the surface of the workpiece to show where the laser will cut. Before starting the first project, place a piece of stock on the cutting deck, and then turn on the power. The red light of the pointer will then appear on the stock. Press the test button on the cabinet. The laser will fire and burn a single point on the stock. Now align the pointer to match the burned point, and you’re set to go.

The LaserKnife not only cuts materials all the way through to create separate pieces but can also etch patterns or pictures onto the surface of the workpiece. The two operations can even be combined to cut out parts with etched surfaces, like stonework, bricks, shingles, siding, or other patterns. These patterns can be drawn using CoreLDRAW or imported as a JPEG or other file types into the program.

The selection and cutting or engraving of a file is an easy five-step process:

1. Begin by opening CoreLASER on the computer. This will open a screen that includes a laser cutter toolbar in the upper right-hand corner.

2. With the CoreLASER screen on your monitor, open the desired file either from the demonstration files or one that is user-created. This file will appear in the center field of the screen.

3. Select the file or parts of the file that will be cut by simply clicking on them. Black squares and dashed lines will indicate the selected items.

4. With the items selected, choose either cut or engrave from the laser cutter toolbar. A small box will appear requesting approval to continue.

5. A large window will now appear with the selected items as an image in the center and a set of commands running down



Close Tolerances

The laser-cut parts fit together precisely with close tolerances eliminating much of the adjustment needed with conventionally cut pieces. The addition of stripwood battens reinforces the structure.



Stairs

Stairs are easily created by stacking progressively smaller rectangles cut from 3/16-inch-thick basswood.

the right-hand side. Click on the object and use the mouse or arrow keys to move it to the preferred start location; the laser cutting lens will move inside the cabinet, so you can align the red pointer at the place on the material where the cutting process will begin. Set the power level on the LaserKnife’s cabinet to half way and press the cutting button to turn on power to the laser. Select the “Starting” command on the computer screen, and the machine will begin cutting. Note: The lid of the cutting compartment has a safety interlock that shuts off the laser beam if the lid is opened.

Different materials will require different power settings and different travel speeds. The cutter program comes pre-set at a travel speed of 16 mm per sec-

ond. Using this speed and setting the power control to 50 percent will easily cut the chipboard provided with the machine as well as most 1/16-inch thick basswood or balsa. Plastics should be run faster with a lower power setting to lessen the chance of melted plastic puddling along the cut line and welding it back together. Cutting through a piece of acrylic or styrene as well as thicker wood may require several passes with the laser. On the control screen, select the number of passes and check the “do not back” box. At the end of each pass, a box will appear on the computer screen asking if the action should be continued. Select “yes” and the next pass will start. Between passes, one can check to see if the part has been cut through before proceeding. Get-

Footings

The structure's footings are easily made by wrapping 3/8-inch square by 3/4-inch high basswood blocks with laser-cut brick paper that was downloaded and printed on a Laserjet printer.

ting the right power setting and travel speed is more a matter of practice and experience than formula.

A good way to dial in the different settings is to use one of the demonstration files to cut different materials. For our test, the O-scale shanty file was used to cut various thicknesses of paper, cardstock, and wood to build the different versions of this model. To practice on plastics, the alignment guide was downloaded from the website and cut from 1/16-inch-thick acrylic stock provided with the LaserKnife. using multiple passes with the cutter set at around one-third power. This acrylic material cuts cleanly and is perfect for use with the LaserKnife. Additional acrylic sheets are available from Micro-Mark. The alignment tool will prove invaluable in making certain that materials are properly aligned and square with the cutter.

One beauty of this machine, in addition to the convenience of making multiple, high-precision parts, is that the design can be changed quite easily. For example, shanty parts can be flipped horizontally to make mirror images that have the door and roof peak on the opposite side of the building, and doors and win-



dows can be added or deleted in just a few seconds.

Once the demonstration files have been mastered, it's time to cut a new project of your design. A good place to start is with a simple structure. I chose a "shotgun" style house in O scale for my first project. Since this type of building can be found all over the country, it would be at home on nearly any layout or in almost any scene. With a few modifications, the basic structure can be used to create a small depot or freight house. With the addition of a steeple, it can also double as a small rural church. So, this is a building that can be used in multiple ways on a layout.

When designing a project, it's a good idea to test-cut the pieces from a sheet of inexpensive cardstock such as poster board or shirt cardboard. This will verify that the parts are properly sized and will fit. If the drawings indeed need to be modified, the more expensive materials will not have been wasted.

The first step is drawing the project. Getting started in CorelDRAW is very easy, particularly when designing a building. Begin by setting the page size to 9.8 by 9.8-inches

to match the LaserKnife's available cutting area. Select the rectangle tool and draw a rectangle on the screen. Dimension this to 2.25 by 5-inches. This will be one side of the structure. Download the Tichy window and door templates from the Micro-Mark download site onto your desktop and select the type of window that is desired. Then copy and paste into position. This procedure can be repeated to place as many window or door openings as one desires.

Next, draw the gable ends. Using the rectangle tool, draw a 2.5 by 3-inch rectangle. Add a one-inch peak centered on the top of this rectangle. Erase the top line from the original rectangle and then copy the end and paste it in another position to yield two identical ends. At this point, door and window openings can be added to the end drawings as desired.

Now select the parts to be fashioned and cut them from a sheet of 1/16-inch thick basswood sheet stock. For our version, clapboard siding with 3/16-inch spacing was used for the sides and ends; however, any siding can be replicated from depression brick cut from a printed sheet laminated onto shirt cardboard to embossed brick sheeting, as well as any variety of

Craftsman Quality

The "shotgun house" is almost complete and only needs the steps added and to be placed on the layout.



milled sheet wood siding.

With the sides cut, draw the floor. Since the stock used for the floor was only two inches wide and the model will be a little over three inches wide, the floor was drawn and cut into two equal pieces and then glued together for the finished dimension. Or, glue two pieces of raw stock together to form a piece wide enough for the final floor and use the LaserKnife to cut to the precise final size. In addition, the slope of the roof was measured and two roof pieces were drawn that measured a quarter-inch wider on both ends and one side to allow for roof overhang.

When the basic pieces had been cut, they were stained with gray transparent oil-based stain, which, once dry, was over-stained with white pickling stain. Several strips of 3/32-inch square strip wood were also prefinished for use as exterior corner posts. To speed the assembly process, pre-finish parts prior to cutting. Items like the floor and other concealed parts, which were not pre-stained, were sealed with

sanding sealer to prevent warp and swelling. This includes the 3/16-inch square corner and interior bracing, which was sealed as well.

Tichy plastic window and door castings were primed with gray primer and then streaked with white artist oil paint. The white paint was wiped with a clean cloth to produce a weathered paint effect. This lets the windows blend with the stained wood siding, giving the effect of heavily weathered paint and graying wood.

With this simple project, the assembly is very straightforward. Glue 3/16-inch square basswood stock flush with the corner edges of both of the side pieces. When cutting the corner blocks, make sure they are short enough to allow the floor to fit flush into the wall assembly. When the glue has set on these sides, attach the end walls to each of the sides. Do not overlap the ends of the end walls with the side walls, but leave a recess in the corner into which 3/32-inch square basswood exterior corner

trim is applied. This technique for finishing corners makes for a very strong joint, which will hold up to even the roughest of handling and transport.

Now that the four walls have been assembled, interior bracing made from 3/16-inch square stock is glued in place. As a general rule, the bracing should be attached along the edges where other parts will be glued to the assembly. At this point, the floor can be slid into place to help square up the structure. The floor should be a snug fit and left unglued, so it may be removed later should additional interior details or interior lighting be added. At this point, the doors and windows can be installed with their glazing added. The Tichy window castings include not only clear properly sized clear glazing, but also have paper shades.

Bevel the gable edges of the roof pieces with a small block plane or sanding block so that they meet at a tight angle when applied to the building. When satisfied with the two roof pieces,



Beautiful

The completed model is ready to add to any layout or diorama. This first time project proved to be fast and easy using the LaserKnife 2525. Plus, this versatile model can be easily duplicated as many times as is needed by using the same drawings created for the initial project.

es, they can be attached to the wall assembly and held in place with rubber bands while the glue sets up.

A quick way to replicate a tarpaper rolled roof is to pre-paint a sheet of peel-and-stick label paper with dark gray Rustoleum Automotive primer. While the paint dries, draw a series of rectangles that measure a scale three-feet wide by the actual length of the structure. In O scale, this will measure 0.75 x 5.5-inches for the shotgun house. Cut the strips with the LaserKnife, peel off the backing, and apply to the roof.

The next set of details that needs to be added are the foundation pillars, chimney, and steps. In warmer climates, these buildings are usually set well off the ground on masonry or concrete footings to minimize the ravages of termites. Farther north, the foundations are closer to the

ground to lessen heat loss, or the structure is set on an enclosed foundation that forms a basement. This project is set on 12 piers cut from 3/8-inch square basswood set at 3/4-inch high (or three scale feet in O scale). Wrappers are cut from Clever Models Old Brick files (downloadable at www.clevermodels.com) and printed on 60-pound cardstock using an inkjet printer. They are drawn and then cut with the LaserKnife. These wrappers are then glued around each pier using Aleene's Tacky Glue and then attached to the underside of the floor. The same technique is also used to make a chimney, which is then glued in place on the roof.

Simple steps were created using 3/16-inch-thick basswood sheet stock cut into stepped rectangles and then glued in layers. To cut this thicker stock, the LaserKnife was set on half power and made the cuts required in

six passes. The stair assemblies were primed and painted prior to being attached to the building.

As with all of our projects, additional small homemade and commercial detail parts can be added to this basic building to enhance the model. Using laser cutting, craftsman level precision is easily attained by anyone who can employ the easy operation of the LaserKnife and the basics of CorelDRAW. With only a few hours of practice, an amazing array of precise parts and models can be created in an almost limitless range of materials. Based on these attributes, Micro-Mark's LaserKnife will allow the hobbyist to reach new levels with their models and may well prove to be "the Ultimate Tool" in anyone's shop. **RMC**

Imagine

Being able to design and cut your own buildings from paper, wood or styrene. This tool is particularly adept at making multiples such as company housing. You can quickly and accurately cut out dozens of structures for the cost of the material. Amazing!



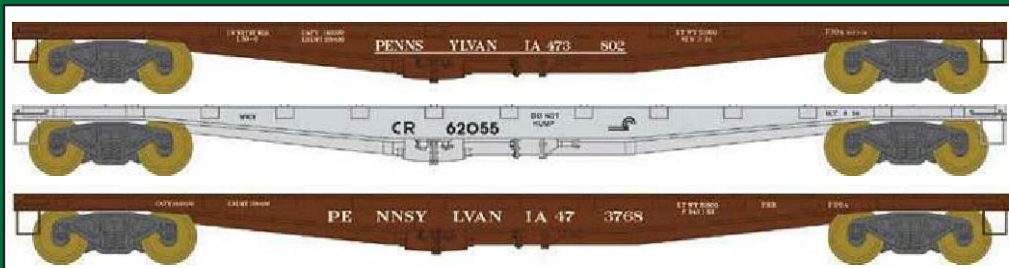
HO Freight Cars:

F30a Flat Cars, 55 Ton Fishbelly & U-Channel Hopper Cars

Ready to Run with added brake wheel, under frame, air tank, brake cylinder, triple valve, free rolling trucks with metal wheels and knuckle couplers.

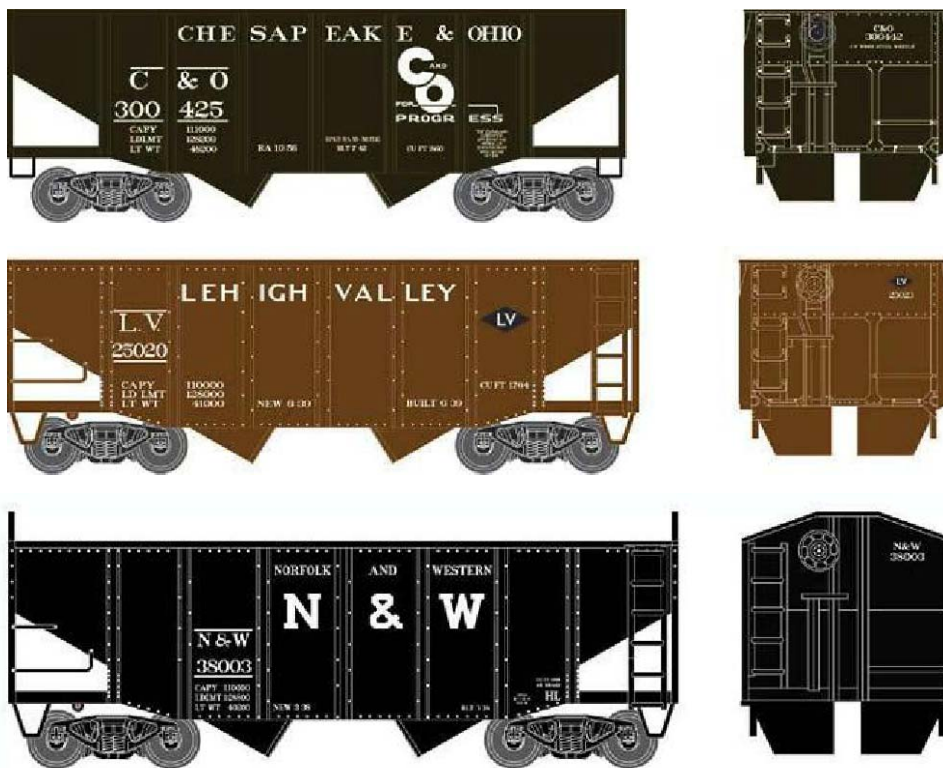
HO F30a Flat Cars

Road Names:
Lehigh Valley, PRR, Conrail MOW, UP



55 Ton Fishbelly & U Channel Hopper Cars

Road Names:
Lehigh Valley, C&O, D&H, Reading, WM, BM, P&WV, TH&B, ACL, & N&W



This Is It, or Expect the Unexpected?



Mike sez...

Probably a majority of RMC readers are old enough to remember the Kenny Loggins 1979–80 hit, “This Is It.” It was a favorite of mine, and I have it in my iTunes collection. Of particular note are the lyrics:

*Make no mistake where you are
(This is it)
You're going no further
(This is it)
Until it's over and done.*

In fact, most of the lyrics of this song might apply to this issue's Look Both Ways column, but if I ran them all here without permission from ASCAP and probably Kenny himself, the music police would have me arrested and put in jail, never to be seen again. And I'll bet it isn't model railroading that my cellmate Bluto would be into.

When the song was popular, the lyrics seemed to apply to my career, if nothing else. In 1979, I

was an editor, writer, and graphic designer in the railroad/model railroad field. Still am. But my first version of my model railroad, the Illinois & St. Louis, was still nearly ten years away. Half-hearted attempts at building a compact layout — maybe one that could be partially disassembled and moved — in the basement of the duplex I rented were overruled by extensive travel in the real world, documenting railroads' comeback that was ushered in by the Staggers Act of 1979, while at the same time starting my own business, Zephyr Graphics & Editorial.

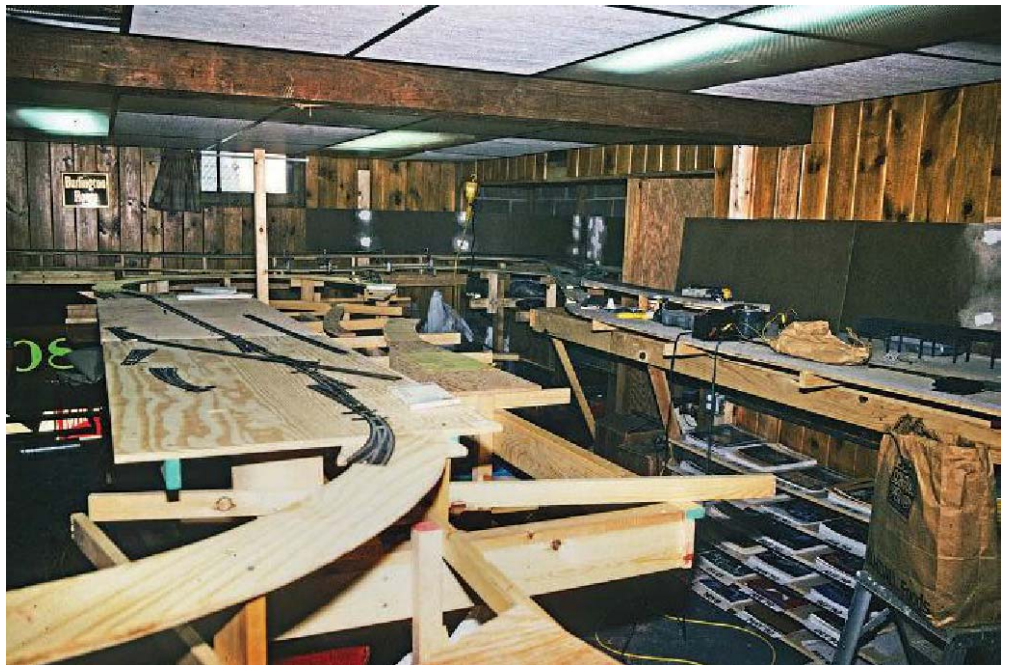
My main customer from 1980 to 1987 was PTJ Publishing, publishers of *Passenger Train Journal* and various railroad books, located on Chicago's far south side at Park Forest/Homewood, Illinois. In 1984, they transferred me down there. I had always wanted to live in the Chicagoland area, and I got my wish.

It was here that I bought my first house, and I looked forward

by Mike Schafer
& Bill Navigato

Mike's world

The original Illinois & St. Louis is shown under construction in 1990 in Mike's 500-square-foot basement in Waukesha, Wis. Traditional and L-girder construction was used. Aisle width was compromised to get everything in that Mike wanted. Mike built this first I&StL without any notions of a future move, though when a move did indeed come, disassembly of this layout happened within a few days, thanks to the use of drywall screws in construction. Much of the wood was saved and reused on I&StL—The Sequel, though not whole layout components. — Mike Schafer photo





to finally building a layout in earnest. I figured it really couldn't be my fantasyland I&StL, which by this time was beginning to take shape, but only in my mind. Besides, my new house didn't have a basement, which I know is inconceivable for some of you readers, but it was all I could afford. Nonetheless, the house did have a nice, heated breezeway linking it to the garage — the perfect location for a narrow switching layout. So, I reinstituted my long-time — since 1963 — tradition of Friday-night work sessions, rounded up a few other modelers in the area, and set out building an Illinois Terminal industrial switching layout, the IT being my favorite prototype.

And then in 1987 came another job transfer after PTJ Publishing sold out to another railroad-book publisher in California. No, I wasn't transferred to California, but back to the Milwaukee area where I had been since 1971 and where I could be back close to my hobby suppliers and numerous friends.

I bought my second house in nearby Waukesha, Wisconsin, and this one had a real basement. At 20 x 25 feet, it wasn't all that big, but it was partially finished and nice and dry. Friday-night work sessions were revived and, come the early 1990s, the Illinois & St. Louis was in operation.

As though I would be there forever, I built that first-version I&StL with manly 2x4s and ¾-inch plywood. It never occurred to me at the time that I might move again. I often describe myself as a 17-year-old trapped inside a _-year-old body (filling in whatever my real age was whenever I made this statement). In other words, live for today! Future? Who's worried about the future?

Well, by about 1996, that changed. The anti-rail mindset of the Milwaukee area and especially Waukesha County was suffocating. Besides, as the I&StL was proving to me, "You need a bigger house!", to paraphrase a line in a familiar shark movie. I further rationalized the move by convincing

myself that I could save and reuse whole parts of the then-current I&StL.

So, I bought two city lots next to BNSF's busy Chicago-Twin Cities main line in a village not far from Rochelle, Illinois, home of famous Rochelle Railroad Park (where Bill Navigato and I will sometimes grab a sandwich and have lunch to figure out what our next column will be all about). And I built a house there to my specs, at least those I could afford, and then set out to build I&StL—The Sequel. I missed my friends up in the Milwaukee area a lot. Still do. But I was back in my homeland where I already had numerous friends, many of them longtime modelers.

I recall my building contractor over in Dixon telling me, as I was doing floor plans and such, "You might want to consider, in designing your house, that this might well be where you'll be living until — ahem — The End." I took that to heart, not only for the house, but for the new I&StL layout. That was almost 20 years ago as I write

Mike's world

This 1997 photo of East Peoria, Ill., on Mike's first I&StL layout shows a road freight out of Peoria rolling along the St. Andrews Air Line while the "Long Arm Local" switches the Transfer Yard, used by the Toledo, Peoria & Western, Nickel Plate, and Pennsylvania Railroad. This was the only major section of the first I&StL that Mike saved for the new layout.

— Mike Schafer photo



Mike's world

Mike (left) and Ken Slade are in the process of moving two large sections of the original I&StL in October 1997 from Wisconsin to Illinois. Part of the staging yard can be seen in the trailer, while the East Peoria section is hanging out of the back of Ken's red truck at right.
— Mike Schafer photo

Mike's world

The new home for the Illinois & St. Louis in northern Illinois stands ready and waiting for electricity and a roof (i.e., house) in the fall of 1997. Mike moved in a little over a month after this photo was taken and began work right away on I&StL—The Sequel. The entire basement today is devoted to the I&StL and consideration is being given for a basement extension to provide more layout opportunities (because, of course, a layout can never be large enough), a second entrance, and possibly even a crew lounge if for no other reason than to shut Bill Navigato up.
— Mike Schafer photo

this, and I've been building the layout as though I will never move to another house ever again unless I win a lottery or something, and then I'll build several houses and layouts, each one themed to a different railroad.

In fact, I did save two major sections of the old I&StL: East Peoria and a staging yard. With the help of Ken Slade, a Chicago Great Western modeler who lives 15 minutes away, we trucked down those and other smaller components of the old I&StL ... and never, ever used them.

Nope. I decided this was my chance to start completely anew,

which was actually easier than trying to fit already-built layout components into the new I&StL. Those old sections would constrain me from carrying out new, better ideas. I like the new East Peoria we built from scratch ten times better than the original, which wound up being hauled away to the dumpster, track and all, though not the Micro-Engineering town trestle.

Nor, with the new I&StL, do I want to be intimidated by thoughts of, "Gee, what if I decide to move yet again? Do I want to do all this work on this or that if there's a chance I will want to move again?"

So, I&StL—The Sequel is built to last, with manly 2x4s, three-quarter-inch plywood, bolted-to-the-floor studs, and — with apologies to Tim "The Tool Man" Taylor — *more power!* Yes, my electrical engineer cousin, Paul Magnuson, rewired the whole basement with 220 volts.

Of course, I couldn't do all this myself. No how, no way. Friday night and sometimes Saturday work sessions with the extraordinarily generous help of perhaps 30 different people — male and female — over the last 18 years have helped by putting forth their best efforts and skills to build Illinois & St. Louis—The Sequel.

Every so often the thought crosses my mind of moving again to even larger quarters, maybe even in an entirely different region — I've always wanted to live in Pennsylvania or Vermont — but I've built my layout to last, built it for today and not for a tomorrow that may never get here. Besides, there's a particularly good reason why I would not tear down the I&StL and move it again. All 30 of those friends would be standing in line to kill me, one at a time.





Bill sez...

Well, Mike, we're still here, celebrating our first year anniversary of "Look Both Ways." Who would have thunk? A lot has happened the past year. Which brings me to my point: that we never know what changes may take place. I'm sure most modelers build a layout with the goal of having it last indefinitely, if not longer. And many will build a layout knowing a move

will take place at some point in the future.

We may never know if changes in our lives may bring us to relocating our model railroads. Relocating may mean a move from an apartment to a house, or because of a job relocation, upsizing, or — perhaps later in life — downsizing. Even that spare bedroom might be needed for an addition to the family. And we've probably all had to or will have to tear down a railroad and rebuild it. A

little pre-planning might help to get our next layout up and running more quickly. We build rolling stock and structures and will use them on subsequent layouts, so why not the layouts themselves? Not to mention we probably spend more time building the layout itself, so why not keep and reuse what we can?

There are many ways a layout can have some sections built and saved for possible future use, even a layout you hope will be your last. Building a layout in a modular manner allows you to easily reassemble it following a move. Although a flatland railroad probably is more adaptable to this method, a little pre-planning of yards and towns located in more rugged terrain can save significant time later.

Modular sections don't have to be just yards and towns. On my layout, there are long — ten feet or more — stretches of tangent track connecting towns. Some of these long stretches are only eight-inches wide. If I ever moved (and I shudder at the thought...) and rebuilt the CP&S, these scenicked sections could easily be placed between future towns, saving lots of

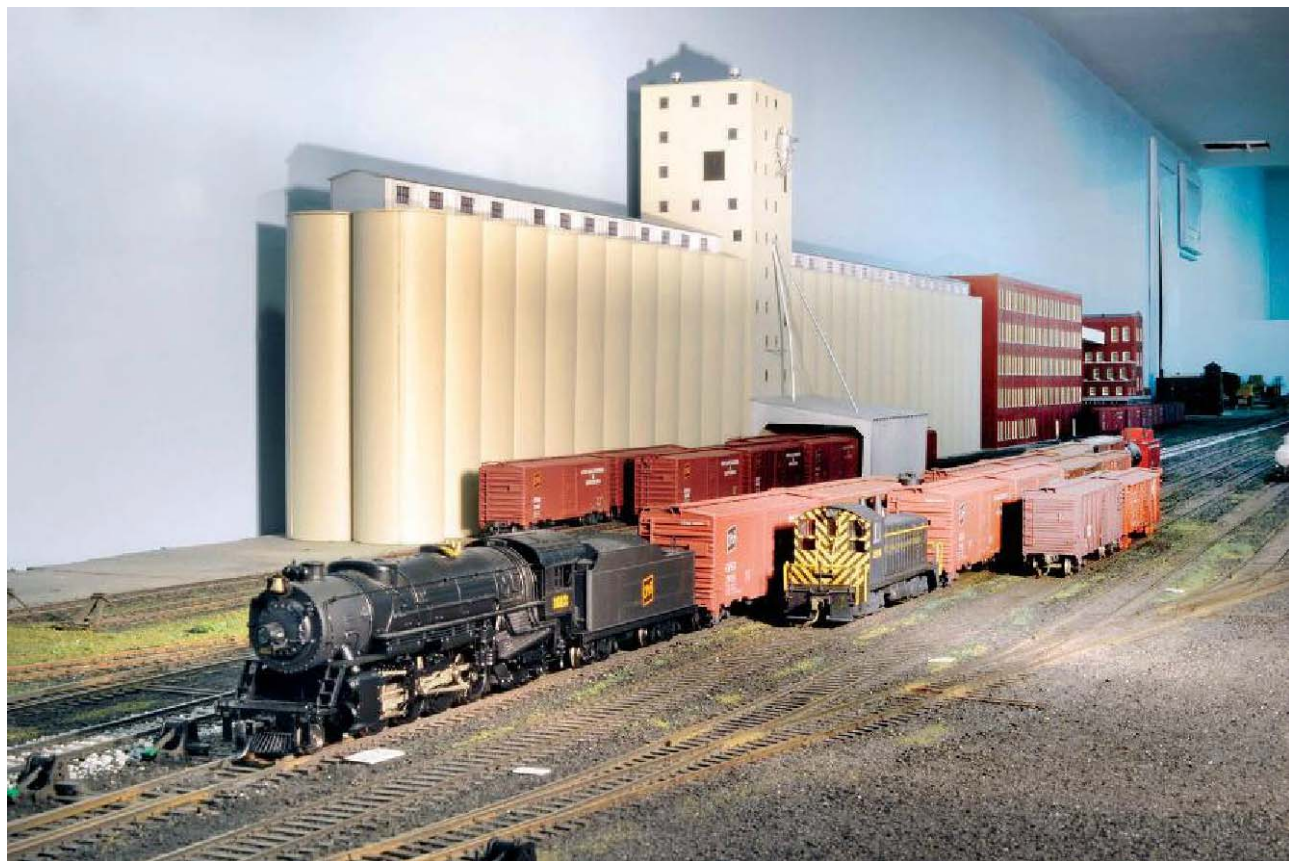
Mike's world

Left: I&StL—The Sequel is well under way in this 2000 photo of the East Joliet (lower level) and north Springfield (upper level) area of the layout. One of Mike's cousins, David Magnuson, who has been helping with the project, stands by to illustrate relative sizes and levels of The Sequel. Mike is building I&StL—The Sequel to outlast himself—although he has no idea who may end up with it after The End.
— Mike Schafer photo

Bill's world

Below: Long stretches of track create a feeling of distance between towns. The CP&S has several sections over 20-feet long, but only eight inches wide. The narrow shelf allows a better view for the lower level and also less that needs scenery. Long sections such as this could be relocated quite easily.
— Bill Navigato photo





Bill's world

Springfield Yard on Bill's Chicago, Peoria & Southern was built with most of the turnouts at one end or the other. If there is a time when the yard might be reused on another layout, the yard can be disassembled into three sections without affecting any turnouts. Other locations are arranged in a similar fashion and attached from below, allowing relatively easy removal should the need arise.

— Bill Navigato photo

time. Long sections can easily be cut into manageable sections and reconnected later.

As discussed before, using foam instead of building the layout out of 4 x 4s and one-inch plywood that you could walk on would make dismantling and transport much easier. This may be something to consider when building a layout, knowing full well that a future move is quite likely. While constructing a layout, a little pre-planning can be helpful should relocation ever happen. For example, people often attach plywood with screws from the top, and then that becomes a town and/or a base for roadbed. Should these sections need to be removed to be reused, locating those screws would be nightmarish. (I know this probably wouldn't be the case for Mike's I&StL, since scenery has not been done.) Having a cleat on top of risers or joists and securing them

from the bottom will allow for easier removal of sections.

If you don't like the thought of saving sections of a layout, at least think about keeping track and turnouts. I have found gluing down track to be the easiest and fastest way to secure it. I use a silicone glue, which works well and allows for easy track relocation later. A little prying with a putty knife and the track is up. The same system would allow removing track for another layout. Ballasting the track can be a little more time-consuming. Track that has been ballasted with white glue can be removed by soaking the ballast with water, then lifting the track gently with a putty knife. It may be a little messy, but at least track and turnouts can be saved for future reinstalling.

Sure, it would be nice to build that one dream layout and have it last forever. But changes along the way may alter our plans. Perhaps

it would be best to plan for that. You never know what will happen. Some day one may be faced with the ultimate surprise question by your spouse: "Would you be happy to move if you could have a bigger basement?" Now how would you answer that? Tell me quickly, please!

A second look...

Recently Mike and I discussed the different sides of the significance of clubs in today's hobby. I suggested there was a place in the hobby for clubs. Well, I just had the great pleasure of participating in an operating session at the well-known La Mesa Model Railroad Club's Tehachapi layout in San Diego. To say it was a blast would be an understatement. Starting with helping to stage the railroad on Friday and continuing through three 12-hour days of operating the superb model railroad with timetable and train

Remembering Andy Sperandeo



Bill Navigato and I, the crew of the Illinois & St. Louis Railroad, and all of us at White River Productions express our condolences to the friends and family of former *Model Railroader* editor and executive editor Andy Sperandeo, whose untimely departure on October 2, 2015, after years of battling cancer, leaves a void in the world of model railroading that will be difficult to fill. Andy hailed from New Orleans, Louisiana, and had a lifelong interest in model railroading. He was partial

to the Santa Fe and had been modeling Cajon Pass at his and wife Arlene Ramm's home in Brookfield, Wisconsin. Andy was a regular at I&StL operating sessions in Waukesha, Wisconsin, and was able to make a few appearances at The Sequel layout in Illinois. He is shown at his favorite I&StL position as yardmaster at Magnuson Yard/Peoria in this 1997 photo taken during the last run of the Waukesha layout. — *Mike Schafer photo*

orders was totally enjoyable. I've operated on many model railroads over the last 40 years, but operating on this club was certainly a unique experience.

I'd like to thank Greg Luiz, who arranged the event, along with the other members for allowing me the opportunity to operate and enjoy their fantastic layout. A special thanks goes to Andrea Zinko for preparing meals daily for the

35 or so who operated every day. Everyone was friendly, informative about the history of the railroad modeled, and helpful from the moment I took the cab of my 75-car train and began my first trip along the 30-scale-mile route, until the last moment I was there. Well done, La Mesa! If this doesn't illustrate the significance that a club can have, nothing will. **RMC**



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"Scratchbuilding" Products

CRAFTSMAN/Bob Walker, photos by the author

Scratchbuilt Setting

Scratchbuilt trees, scratchbuilt water tower, and scratchbuilt track — all I did to the locomotive was pay for it.

I started my "modeling" hobby the day after Christmas of 1954 — after Santa brought me a Lionel train set — at the ripe old age of 10. As a school kid on Christmas break, I trundled down to my dad's basement workbench and scouted around for some wood from which to build a caboose. I tried to build that caboose out of a sanded down wooden yardstick. To call the project a failure would be an understatement, and it got me in hot water from Dad to boot. I learned at an early age to put Dad's tools back where they belonged when I finished using them.

I stuck with the store-bought stuff for a couple of years and then tried the homemade approach again by building a card-

board handcar shed. Interior bracing was a foreign concept at that age, so the building — held together with masking tape — was what one might call flimsy. Northern Illinois is a humid place, and it took little time for the thing to warp like crazy. Failure number two! My dad, a former U.S. Marine Master Sergeant would not tolerate his son being a quitter. He took me aside and calmly suggested that I try again, painting all the cardboard surfaces to abate the moisture and then bracing the walls with small sticks of wood to firm it up a bit. At 12, the building was still an abomination but lived on the layout until I went to HO in the winter of 1958. That building went down the road with the rest of the tinplate mate-

rial. It was soon after Christmas of 1958, when Mom and Dad got me an Athearn set, that I built my first successful scratchbuilt building — a brewery inspired by a photo in *Model Railroader*. I used commercial brick paper, commercial basswood, and commercial roofing material as the raw materials to "scratchbuild" the model.

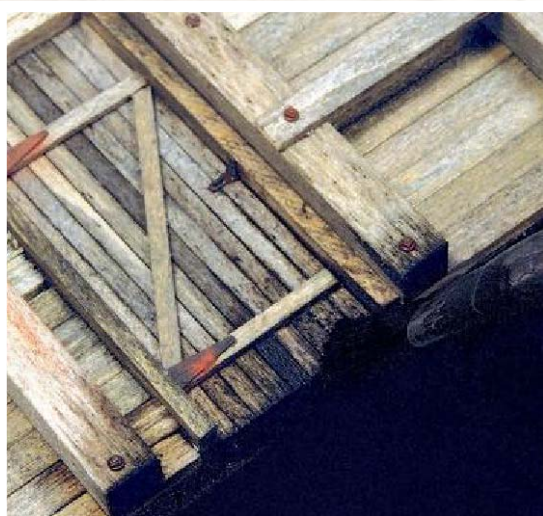
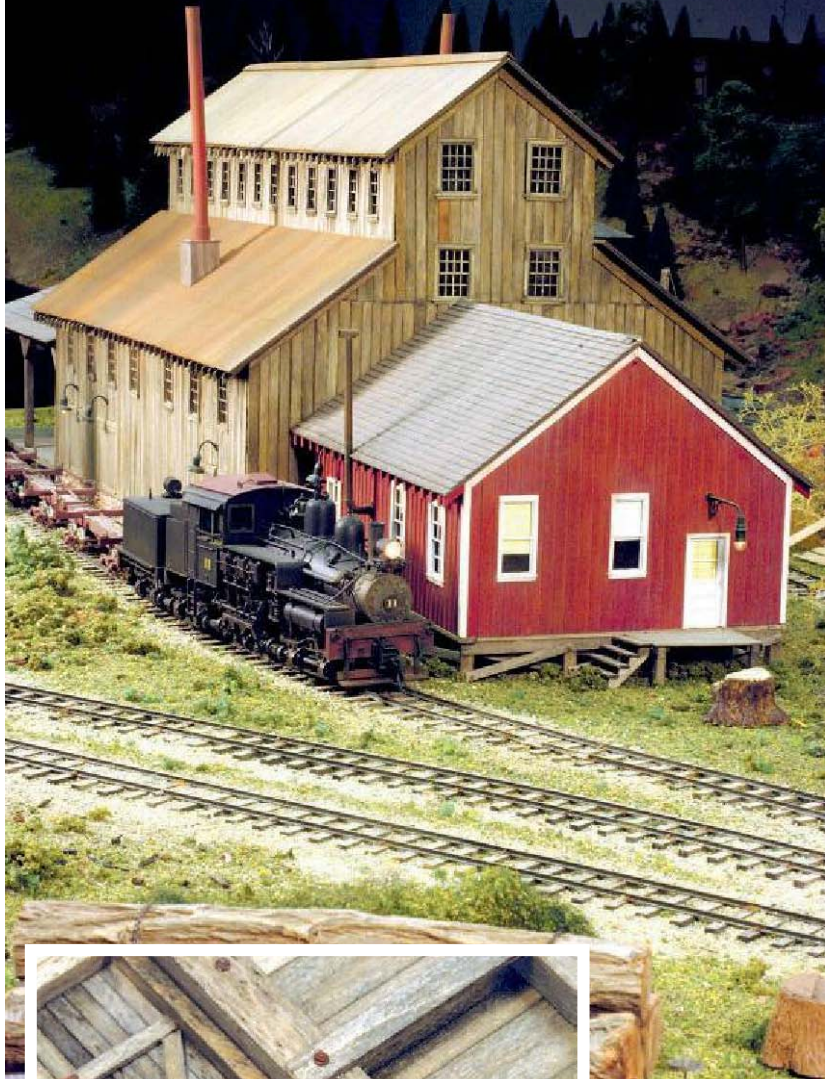
I honestly do not know where that building went. A part of me wishes I had been smart enough to save it. I was not, and did not. I guess here is as good a place as any to fess up: I'm not all that reverent about the models I create. For me, the fun (it's only a hobby) is in the building process itself, not in the possession of a given model. The bulk of what I've built

over the years has been sold off or given to friends. I guess I build only to serve current needs, and I am not at all sentimental about those models. Even the models that take literally years to create have gone or will go away. I donated the one-inch scale Rio Grande Southern 4-6-0 to the Galloping Goose Historical Society in Dolores, Colorado, along with the RGS caboose 0404. I did a column on each of them. The five-foot-long model of a Denver & Rio Grande Western rotary snowplow will probably go to the Colorado Railroad Museum as will the now-started K-27 Mudhen (one-inch scale) currently underway. Having built the ten-wheeler, I got up the nerve to attempt the more difficult outside-frame 2-8-2. I just like to build stuff! It is only a rough guess, but I've probably built four to five hundred models over the last 60-plus years and can only account for about half of them. I do know this: I sure had fun building them and even writing about a few of them as well.

The term "scratchbuilt" is a loosely defined term at best, which is why I chose to put it in quotes in the title. I guess it all depends on how narrow you want the definition to go. I do not have a sawmill, nor did I start a wood structure by felling a tree. Likewise, I do not have an oil well or refinery to make styrene. On the three brass locomotives I "scratchbuilt" are some very nice detail parts. I did not craft them from brass barstock; I bought them at a hobby shop. Someone else cut down that tree, discovered and refined that oil, and really did scratchbuild those brass masters for all those detail parts. All but a very few of us require commercial products to pursue our "scratchbuilding." There's those quotes again...I've made my point, so I'll stop that nonsense now.

In the 1950s, when I started this fine hobby, there were far fewer materials and models available than we enjoy today. My elders who started in the 1930s and 1940s were the true pioneers. They had a lot less to work with and had to scratchbuild almost everything. Scratchbuilding today is more of a choice than a necessity. Yes, building from scratch saves money and is both rewarding and fun, but most of us still purchase many of our models. Model railroaders started most of the com-

You can easily call the sawmill "scratchbuilt," but there was a lot of help from Grandt Line, Northeastern, and others. As to the Shay, some highly skilled Koreans and a few American patternmakers had a lot to do with it.



Lumber

Thankfully, Northeastern, Kapler, and others make a wide variety of scale-size lumber. I am also glad not to have to build hinges and NBWs.

In the Details

Small manufacturers make tens of thousands of detail parts. One can, indeed, make a living at this, but the work is hot and difficult.

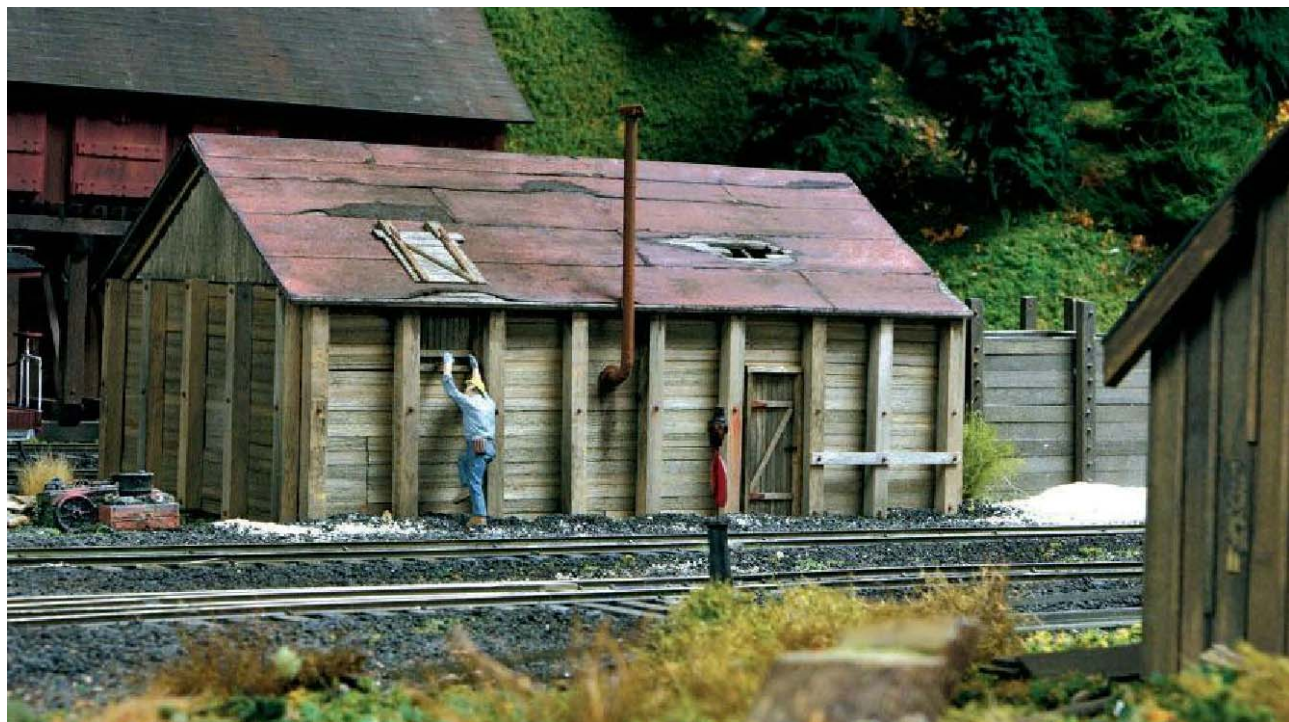


mercial enterprises in our small hobby. These people perceived a need in the hobby and saw an opportunity to perhaps make a living doing something they truly loved. Others just do it part-time to earn enough to support the addiction/habit. Either way, it is we, the hobbyists, who are the true beneficiaries of their risk. The risk is huge, and the list of those

who lost their shirts is a long one.

In 1970, when I started writing for *Railroad Model Craftsman*, I had the privilege of attending the big Hobby Industry Association show at a large downtown Chicago hotel, courtesy of then-RMC editor Tony Koester. The rough draft of the last sentence had the word "big" in quotes. Apart from over-using that punctuation, HIA

really was pretty big. They had offices in downtown New York and a paid lobbyist in Washington. The show was a real eye-opener for me as to what the industry was all about. I actually met and became good friends with several of those pioneers from the Thirties and Forties. On the show floor, and over cocktails afterwards, I quietly listened to their stories.





Vehicles

There are a surprising number of commercial vehicles available today. I dread the thought of trying to build one from scratch.

Shingles

Without the Oregon Rail Supply shingles, this imposing structure would have doubled its build time and not looked as good.



At that point, I was determined to join them.

It took another ten years before I did. Of the hundreds of business owners I've met in this industry over the last 45 years, three were real jerks. The rest were salt-of-the-earth honest folks I am proud to have known. Unlike many other industries, our little niche is sat-

urated with really good honest people. We are indeed fortunate. I am not naming names out of mortal fear of leaving someone out and the fact that Steve Priest would likely balk at the extra 20 to 30 pages of text to edit.

Northeastern, Evergreen, and Grandt Line are probably responsible for several million buildings and freight

cars. All three are full-time companies with many employees. Their products, of which there are thousands, are the raw materials that make these models possible. They combine to occupy a multitude of pages in the Walther's catalogue and website. This column always seems to offer some sage advice about one thing or another, and this one is no different. Take a few extra minutes to look at the ads in this magazine. It is the small details that set our models apart from the mundane and draw attention to the scene. Look at the smaller ads and find out what the basement companies and smaller manufactur-

Left: I like to say I "scratchbuilt" RGS No. 42, but I hope none of those patternmakers are within earshot.

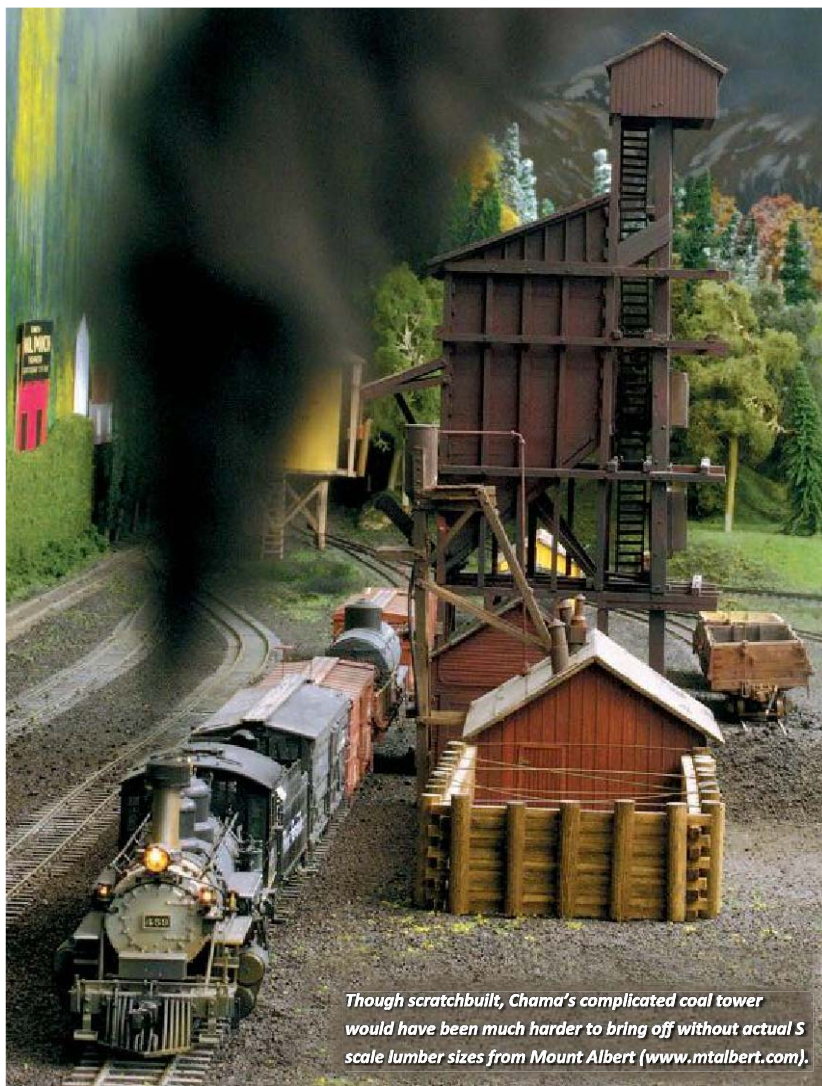
Below: The only scratchbuilt item in this photo is the building in the foreground. The locomotive, however, has ten times the amount of hours in it by its builder, John Swanson.



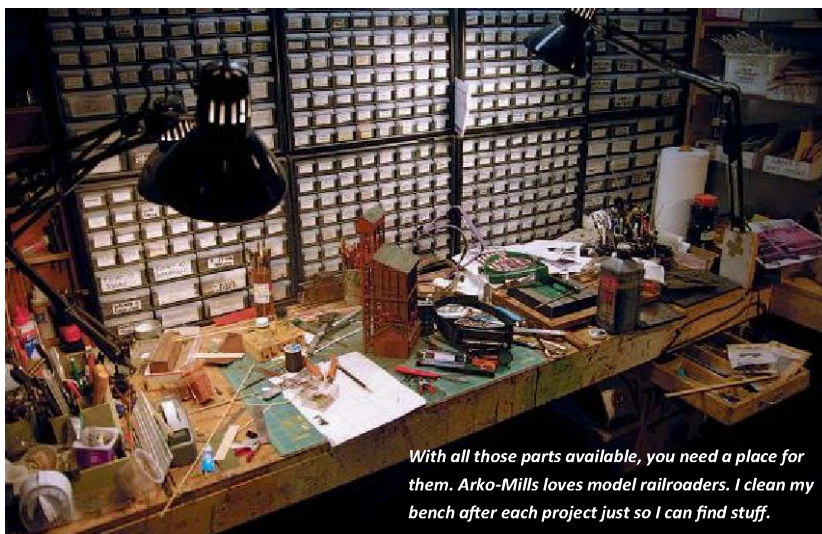
ers have to offer. There are some real whiz-bang items out there that make for some real eye-catching models. Be sure not to overlook the laser guys — they make way more than high-end craftsman structure kits. Many offer a boatload of parts and details that make a modeler's life a lot easier.

I have a wife that is a semi-pro shopper — not that she gets paid to shop, but that she does it so well. She constantly comes home and presents me with some doodad she has found, knowing full well that I will find a use for it. In your daily out and about, don't overlook the likes of Walmart, JoAnn Fabrics, Hobby Lobby, and other small independent craft shops for things you never even knew you needed. Cruise the other departments of the local hobby shop and check out the offerings for model planes, boats, and cars. They have some useful stuff over there. The best soldering iron I own was bought at a craft store in the stained glass section. It is a cheap affair that cost all of \$9.95 and was obviously made for a woman — it's pink! It heats up nice and hot and melts solder into rail joints real well. I just hide it when friends come over.

While we are on the subject of products (hobby products, that is), let me say a few words as a provider of some of those products. The term "limited run" invokes a lot of response in this minute field, much of it in the negative. There are those commodities in life that are seemingly in endless supply. You go to the grocery store and expect to be able to buy bread and milk. The store shelves are always stocked with these items because the demand is constant. The demand for most hobby products is anything but. Manufacturers have to make an educated guess as to how many of a given product the market will take. Underestimate and you're highly criticized. Overestimate and you now have much of your investment sitting on your shelves. All hobby products, by their nature, are limited runs. When an item is referred to as such in ads, it is likely an item of equally limited appeal or very expensive to produce. In the latter case, financial outlay becomes a major concern (brass?). We all want to sell as much as we can, so only a few go short on purpose, and they usually don't last long. **RMC**



Though scratchbuilt, Chama's complicated coal tower would have been much harder to bring off without actual S scale lumber sizes from Mount Albert (www.mtalbert.com).



With all those parts available, you need a place for them. Arko-Mills loves model railroaders. I clean my bench after each project just so I can find stuff.

Test Track



BLMA Models: Bx-166 Boxcar

HO & N — Not only will Santa Fe modelers welcome BLMA Models' recent Bx-166, but so will most any operator with a layout based in North America from the 1970s to the present. This new model comes to the hobby for the first time in plastic ready-to-run form in both HO and N scale. This is BLMA's first venture into a railroad-built prototype freight car model. The prototype came from Santa Fe's own Topeka Shops beginning in 1974. A total of 300 examples (621300–621599) went into service for the road, some of which continue to operate today under Santa Fe successor BNSF.

The Bx-166 prototype measures 61-feet, 6-inches in length (66 feet over couplers), stands 15-feet tall, and features a 16-foot door opening (twin eight-foot plug

doors). The car features a fishbelly sill and cushioned underframe. While this modern insulated double plug door boxcar resembles other "beer cars," a spotting feature distinguishing Santa Fe's Bx-166 is the angled ribs framing the doors on the car sides. The car served originally in beer and wine transportation, and Santa Fe's fleet of Bx-166 are common sights all over North American rails.

First released in bright Indian Red with black ends, the prototype Bx-166 series received large white circle-cross Santa Fe heralds and white-and-yellow "Super Shock Control" slogans. A revised or simplified solid Indian Red scheme followed for the Bx-166 cars with all-white lettering that included the same large white circle-cross herald and a basic "Shock Control" slogan.

The 1980s saw repaints in a variety of styles that presented a minimalist Mineral Red dip with very small white circle-cross herald applied in many cases to the upper left corner of the car. Reporting marks and dimensional data were only present on the car sides. Other examples lack any herald and featured only ATSF reporting marks. After more than 40 years in service, you can still find Bx-166 cars working, though many no longer find themselves carrying packaged liquor products. More than a dozen paint and lettering variations are known to exist, including Santa Fe's "Q" car and contemporary BNSF power-bar herald lettering.

BLMA's owner, Craig Martyn, shared in a company YouTube video that research work for the model included a visit to Golden, Colorado, to obtain information

Any company wishing to submit products for Test Track may do so by providing samples to be reviewed to the address below. We prefer light-colored models that will photograph well. Submitted models will not be returned.

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to aid in production of this impressive new offering. That's the location of my first memories of these cars, which date to the mid-1970s and trips past the Coors brewery on family vacations to enjoy the Rockies and Rio Grande. Burlington Northern SD9s were frequently the motive power, along with Coors' red switchers shuffling strings of beers cars of this type at the brewery. Other model manufacturers produce different 60-foot beer car prototypes, allowing modelers to assemble interesting trains of similar-looking insulated boxcars in this type of transportation service.

BLMA Models' new Bx-166 features an injection-molded plastic shell with etched-brass and wire details. Both HO- and N-scale cars ride on 36-inch metal wheels. BLMA provides scale-head Ka-dee-made metal knuckle couplers for its HO version and knuckle couplers on its

N releases. The HO Bx-166 is especially eye-catching with separate grab irons, coupler cut levers, crossover platforms over couplers, trainline air hoses, and intricate door rods on the plug doors. For its N-scale boxcar, BLMA includes separately applied coupler cut levers, etched-brass crossover platforms, and trainline air hoses, and ride on the model company's ASF 100-ton Ride Control truck sideframes. Well-executed under-frame detail is present on BLMA's models in both scales.

BLMA has issued two production runs to date with a third release coming (see this edition's Receiving Yard section). The first release provided Mineral Brown Santa Fe repaints in two versions: with and without a herald. A second offering gave modelers the great-looking Indian Red 1970s prototypes with Super Shock Control models with black

ends and simplified solid red cars with basic Shock Control slogan. The coming third production covers BNSF versions for the Bx-166.

The HO Bx-166 weighed 5 ounces, while the N-scale model measured 1½ ounces. This places both models near or at the National Model Railroad Association's Recommended Practices for a car of this length. Coupler height on the HO- and N-scale samples was accurate, and all wheels in both scales were in proper gauge. BLMA delivers the goods on this popular prototype. Modelers will find these appealing cars ready to add to consists for a variety of eras from the mid-1970s to the present. — **TONY COOK**

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64151

Unused entries may be retained for future editorial use in Railroad Model Craftsman.

Many years ago, I saw a great-looking structure on Dick Elwell's beautiful Hoosac Valley Railroad that inspired me to kitbash Bridge Brothers. The starting point for Bridge Bros. was South River Modelworks Lamson & Goodnow Mfg. kit. Using the main kit components, I added a third story to the main building, built a new warehouse with wall sections from the larger building, and attached the office to the main structure to give it an L-shaped footprint. The office and main mill were designed to stand alone if built following the instructions. As for the name, my good friend Ted Bridge and I were tossing around possible names for the industry when he said his uncles owned a factory called Bridge Brothers. I really like the sound of it, so decided that would be the name. I was born in 1953, but the structure is obviously much older than that, so I decided to put "Est. 1853" on the sign.

Rather than go over the construction step by step, I will cover the major construction steps, which can be applied to kitbashing any number of structures. I used standard construction methods described in the kit's instructions to build this factory complex.

Getting Started

The kit's brick walls are made from Hydrocal castings. I had to make new castings of all the wall

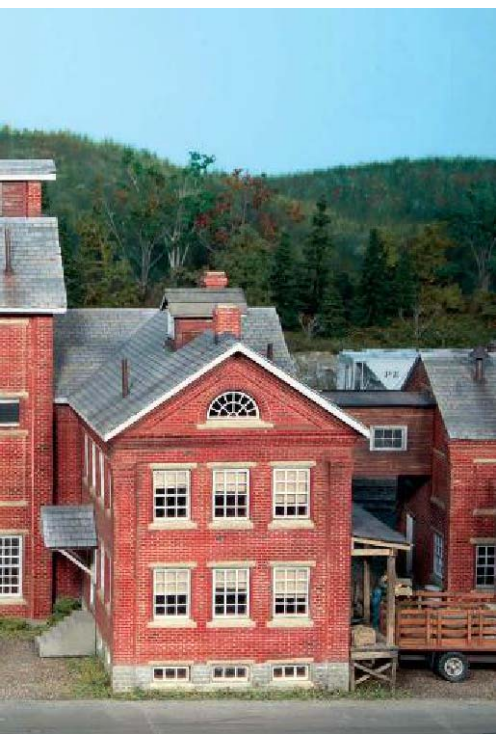
sections to add an extra story to the main building. I figured that, while I was at it, I would make molds of all the Hydrocal castings in the kit. That way, I would have spares if I should break a casting during construction. (Hydrocal castings are very unforgiving when dropped on the floor.) For my molds, I used Alumilite HS3 RTV rubber that I purchased from Alumilite. This is a very flexible rubber and can reproduce extremely fine details, yet is very strong and will last through many pours. I built a mold box for each casting from styrene and glued the castings in place with white glue. Once the molds had cured, I proceeded to pour the Hydrocal in each mold and let it set. When dry, I removed the molds and poured a new set. I made about four castings of each piece. Hydrocal is fairly cheap, so I figured I would make sure I had lots of spares in case I needed them later. Once I was done with the original castings, I soaked the mold boxes with water. The original wall castings separated from the styrene and were good to be used for the structure.

I needed another brick section for the new peaked gable end that sat atop the third story of the end wall. To make this casting, I cut a piece of HO scale Holgate and Reynolds brick material and glued it to a block of wood the same thickness as the other kit-supplied wall casting sections. This gave me a blank Hydrocal brick wall section that could be later cut to the required shape for the end wall. Once the block was built, I poured a rubber mold and cast several of these blank brick pieces.

Main Building and Office

I sketched the basic design of the modified main building to determine how the various wall sections would fit together. I gathered up all the wall castings and sanded them to uniform thickness since they would be stacked on each other, and the thickness would be critical for a good fit. At this point, I cut the new third-story walls to the correct height and added each piece to the top of the corresponding original kit

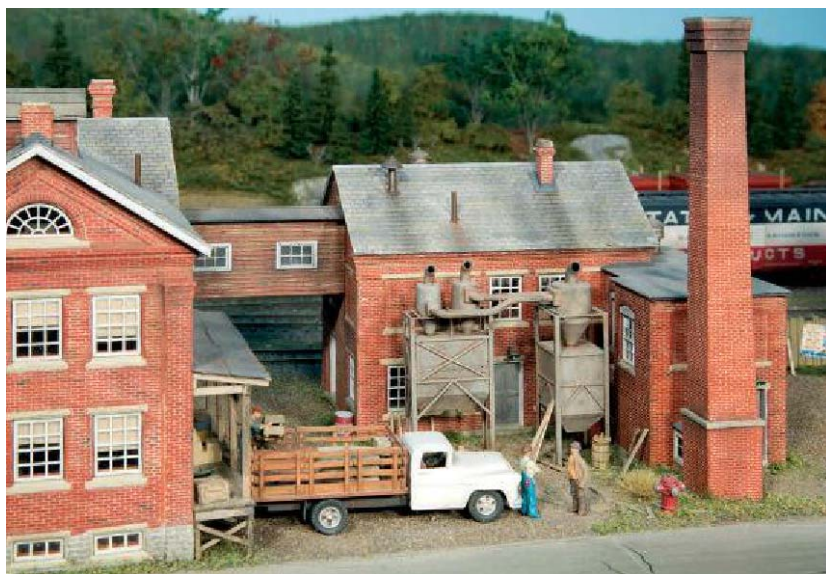
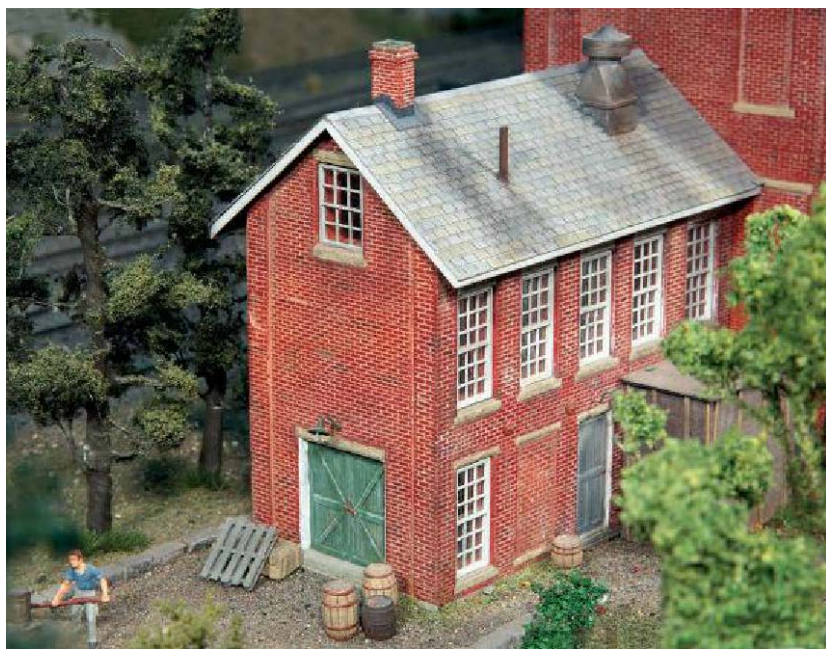




walls, being very careful to get everything square. This took quite a bit of time; however, getting everything to fit is important. Be patient and test-fit every piece as you go. All the Hydrocal pieces were glued together with white glue, and then a piece of thin card stock was glued over the joints on the rear of the castings to reinforce them. After gluing the wall sections, I painted and weathered each section following SRMW's instructions. After the paint had dried, I glued the basic structure together, making sure all the corners were square and the walls were straight. I reinforced all the interior corner joints with 1/8-inch stripwood. At this point, I had a large building shell.

For the long wood skylight section, I cut horizontal lap siding to the correct height and width, cut the window openings to fit the Grandt Line windows, and glued it between the two end walls. Again, I used 1/8-inch square stripwood to reinforce the joints.

The office building was pretty much assembled and painted as per the kit's instructions; however, I switched the front and back walls, so the large loading door appeared on the right side to accommodate a loading platform. Once complete, I set it against the end wall on the right side of the main mill, creating

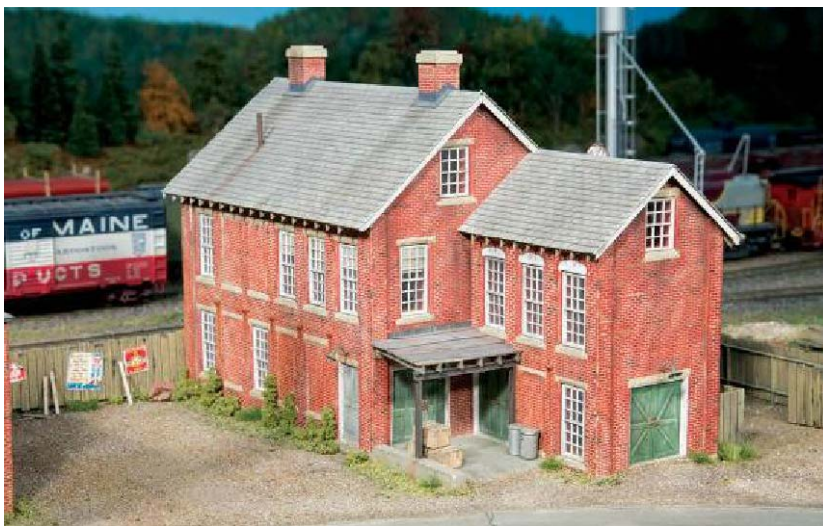


an L-shaped footprint.

I added a small two-story extension on the left side of the mill. This structure was actually designed to go on the right side, but I had to relocate it since the office was there. To add a little length to the extension, I added an additional section with two more windows to the front and back walls using the extra castings I made previously. With this extension added, the main mill building was complete. At this point, I added the window castings, roofs, and various details and glued the sections together.

Woodworking Shop

The kit includes a really good-looking little woodworking shop with some nicely detailed dust collectors, vents, and a brick chimney. I built this structure exactly the way the kit described. After trying out several different locations for this building, I decided to place it to the right of the main mill and add an enclosed raised walkway between the two buildings. I created the walkway from horizontal lap siding, rolled roofing, and Grandt Line windows.



The Warehouse

Once the main mill and woodworking shop were completed, I found that I had enough room for one more structure for the mill complex. I decided to build a warehouse using some of the castings I had made. The rear wall of the main building in the kit consists of two equal-length wall sections, each with different door and window loca-

tions. I simply used the two end wall castings from the main building and one back wall section for each side to make the warehouse. This nice-size building seemed too plain to me. I felt it needed something else, so I added the narrow extension to the front using the castings meant for the brick extension on the right side of the main building. As you can see from the photos, these are the

same castings I used for the longer extension on the left side of the main mill. After painting and weathering the walls, I added the roofs and built the canopy over the large front door.

Final Touches

I raided my parts supply to put the finishing touches on the factory complex, adding various chimneys, stacks, and vents to the roofs. Some items I had on hand; others came from the casting in the kit. I also added a small wooden entry door and a tarpaper-covered shed to the front of the structure, as well as a small wooden cupola on the office roof. Since the rear of the structure won't be seen, I didn't add any window castings or details to that side. However, I retained all the parts in the event the structure is ever moved and will be viewed from the back. A sheet of black paper added to the inside of the structure prevents viewers from seeing right through the building.

I am very pleased with the way the structure turned out, and it is a really nice foreground building for my White River Junction scene. [RMC](#)



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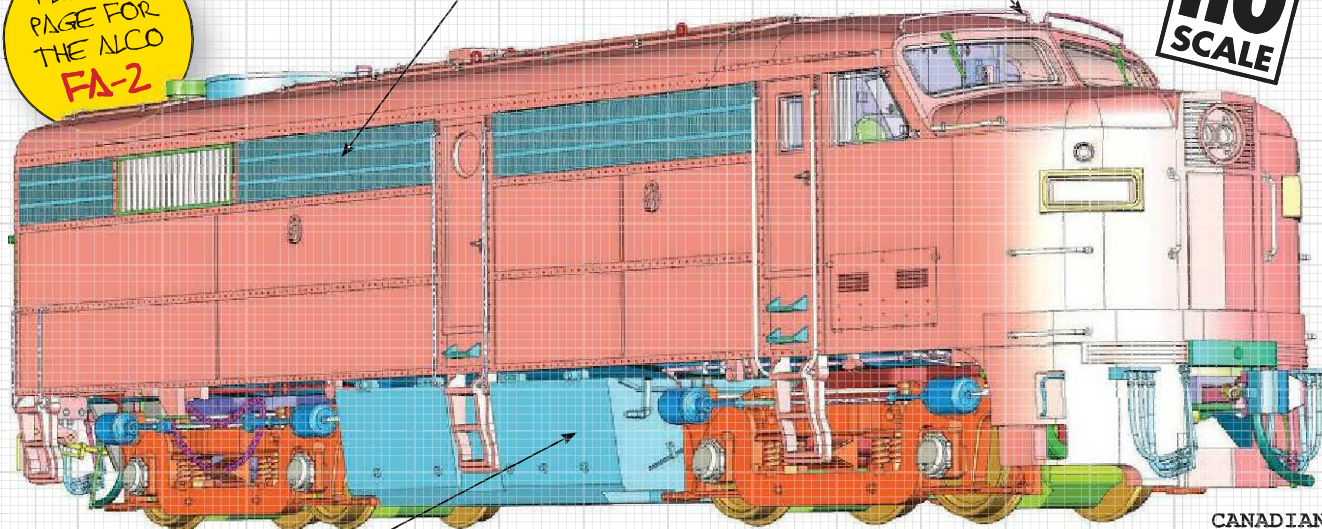
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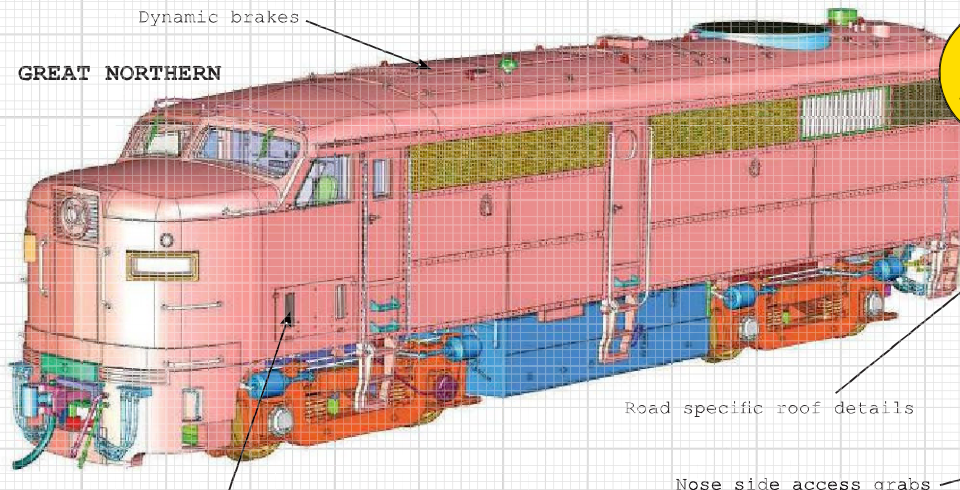
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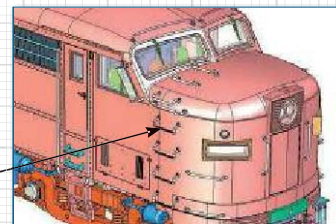
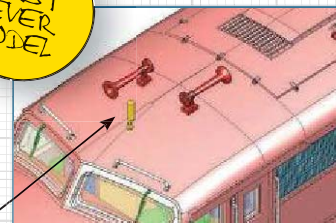
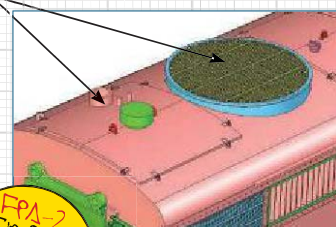
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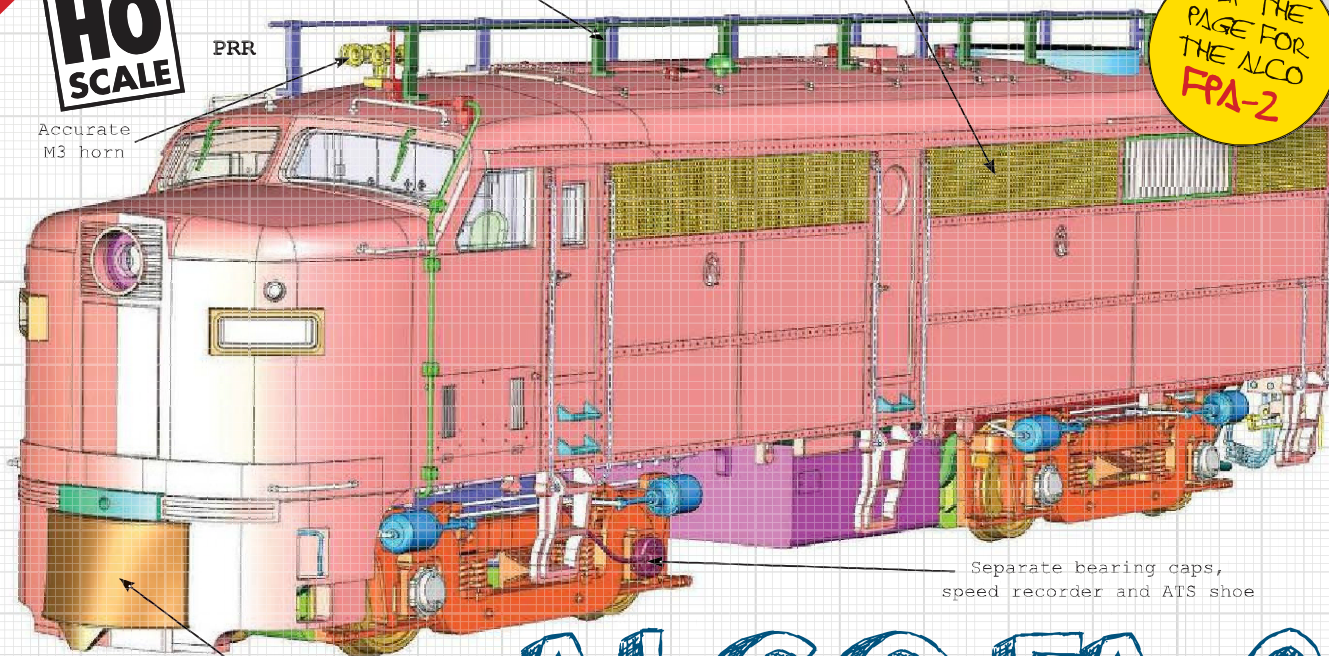
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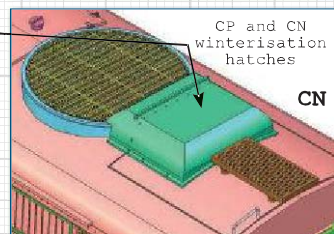
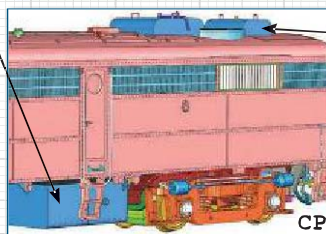
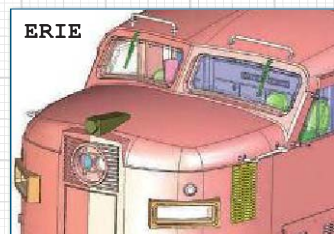
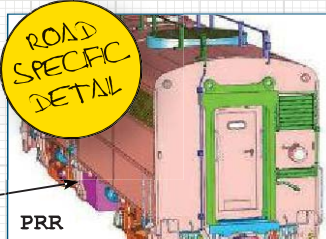
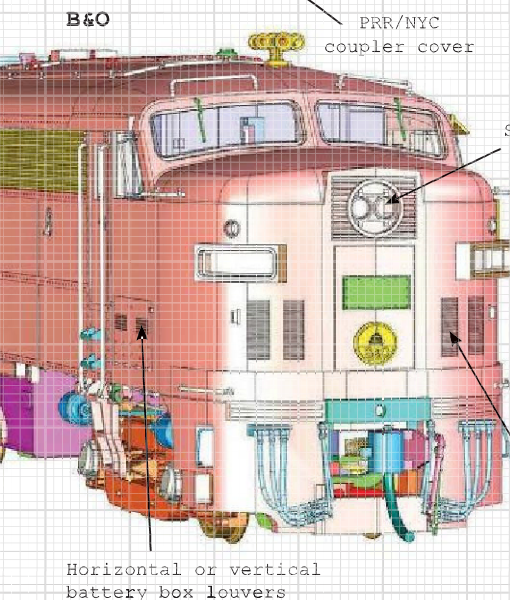
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